

Problems of Higher Education in India

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Preface.



A STUDY of Indian educational problems written ten years ago, which begins with a reference to the Universities Act of 1904 as a recent event, is not such a cooking up of stale viands in 1916 a mere insult to the intelligence? This is a natural criticism of the papers here reprinted, which author and publisher must be prepared to face. Yet ten years, 1906 to 1916, is not really a long time in the history of an educational experiment on a great scale; while, on the other hand, it is long enough for judgment of results. University reform in India, the reform initiated by Lord Curzon in 1901 and brought to a culminating point in the Universities Act of 1904, has been on its trial since 1906, when the new regulations were finally shaped and came into force. There were many controversies in 1906, and there are many controversies now. Most of them are likely to remain permanently with us. But as regards the University of Calcutta a decisive answer on the main question—"Has reform been effective?" seems to be given by facts which are not matters of disputation. During the course of last year two committees were appointed by Calcutta University, one a Committee of five appointed by the Senate to seek explanation of a rise, which some regard as portentous, in the percentage of passes at the Matriculation and B. A. examinations the other a Committee of sixteen, appointed by the Faculties of Arts and Science, with a scope indefinitely wider. The Committee of sixteen have undertaken two distinct, if allied, enquiries each of a range which tends to the unlimited. One is a survey of improvements; of improvements actually made since 1906 in affiliated colleges (some fifty), and in schools recognized for matriculation (some eight hundred), and a recommendation of further improvements possible. The other is a scrutiny of courses of study, and of methods and standards for Calcutta examinations; in fact, a field of enquiry nearly co-extensive with the reforms proposed in

1906. The smaller Committee has met several times, and its report may, perhaps, be expected before long. The larger Committee met once before the close of 1915 and has not met again. But the very appointment of this latter Committee is plain evidence that all is not well with "university reform" in Bengal. A fact even more eloquent is that the mover of the resolution for the appointment of this Committee was the Hon'ble Justice Sir Ashutosh Mookerjee, for eight years, 1906 to 1914, Vice-Chancellor of the reformed University, and one of the Select Committee which in 1906 at Simla gave final shape to the new Calcutta regulations.

We seem in a sense to be back at the point where we were before the new regulations were framed. "In a sense" only, because times never stand still and history never repeats itself, and since 1906 we have had an orgy of schemes for Universities of new type, "teaching and resident" universities—Dacca, Patna, Nagpore, Burma—and the separatist universities, Moslem and Hindu. We are, at all events, back at the beginning in the sense that university reform, as understood in 1906, is to some extent discredited and many of the questions, of which the new regulations were to be the settlement, are once more open. This is my apology for reprinting these papers. Whether it is any justification is a harder matter. In 1906 my point was that an effort of concentrated and coherent thought is necessary before we can grapple usefully with the problems of Indian education. These problems require, first, a serious effort of thought to arrive at principles; they require, secondly, a fearlessly logical working out of practical deductions from these principles; and, thirdly, they require courage to act on the conclusions reached. This was necessary in 1906, and it is necessary now in 1916. Possible failure has been due most of all to the omission of the original effort of thought. At all events, it is because the chapters following represent a genuine effort to think out the problems in an orderly way, and because the main problems after ten years of university reform in action are so little altered, that I venture on this fresh publication. We still need a firm grasp of the ultimate guiding aim (Chapter II); we still need a more vital realization of the importance of the school (Chapter IV); we still need the distinction of scientific and unscientific teaching as deeper than the distinction of

Science subjects and Arts subjects (Chapter VII) ; we need more than ever to guard against the perverse use of examinations (Chapter IX). Perhaps, more than all, we need to apprehend the true purpose and value of the college and its organization (Chapter X).

The writer has been censured in the Senate of Calcutta University and elsewhere, for maintaining that educational problems, and even, with due safeguards, Indian educational problems must be settled on scientific principles. The writer is impenitent. In that belief these papers were written ten years ago. He still believes that there are "principles," and the efforts of the last ten years in Bengal have been frustrated largely for want of the application of clear and consistent thought to principles. In these beliefs the determination to re-publish these papers was taken. Whether it was a foolish determination, or a wise, must depend on the judgment of those who read.

H. R. JAMES.

S. S. Manora.

The 29th April 1916.



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Problems of Higher Education in India.

THE PROBLEM IN GENERAL.

THE Universities Bill, if it effects nothing else for us, has done us this great service, that it compels us to recognize the unity of the problem of the universities. The differences, no doubt, also need to be taken into account and in the readjustment which is about to take place ample scope is left for the due consideration of these differences, since the details of reorganization are to be the work of the new Senates. But, while it is true that, when we take account of the history and circumstances of the five Indian universities, the differences are great, it is none the less true that the educational aim is one, and that the general principles which should guide our efforts after better education in the various divisions of British India are the same.

The Government Resolution of 12th March of last year goes further. It correlates the more special problems of the universities with the educational movement as a whole. We are reminded that the education to be given by the universities is not an isolated enterprise, but the culminating stage of a great system of imperial education, which, if it is very far from being realized as yet in its entirety, has been laid down in broad outlines, and is in process of realization from day to day and from year to year. The value of this point of view is the grandeur of the conceptions which must be framed in adopting it, by reason of the very immensity of the factors and forces with which we are dealing. It may be difficult to rise to the requisite height of conception. At times the sheer immensity of the task we have to confront may be depressing. But, on the whole, it is good for the teacher to make the effort to rise above the details of the daily work in which he is immersed, and look forth over the wide prospect of the Indian educational field spread out as a great whole. The effort itself is tonic. It is a stupendously vast undertaking, upon which, whether

includes the grounds surrounding the college and the approaches thereto; the lecture-rooms, libraries, laboratories and their appointments, the dress and bearing of all servants employed there, and of the students themselves, and also of the staff; may we say that there must be nothing mean or unsightly in respect of any of these? And may we lay down as the reason for this demand that, if our education is to have value for Indian students, it must, as a matter of first necessity, inculcate decency, seemliness, and good order in all respects from the least to the greatest? Or is this also a fad—a fancy of the irresponsible idealist?

What also of the college staff? What is the proper relation between principal and professors? Discipline, of course, we must have. Shall we think of our college organization on quasi-military lines, or compare our principal to the captain of a ship, who merely gives orders which are obeyed? Or, may we temper our college rule with some measure of sweet reasonableness? May we expect our principal and his staff to consult together for the common good, and to co-operate in some more effective manner than the mere giving and carrying out of orders? Again, what is our conception of a professor? Is he a mere lecturer? Is his relation to his students and to the college external only, or is it something more intimate? What form does his instruction more properly take—that of lecturing, or class-teaching, or individual tuition? Is he to be considered a lecturer, a tutor, a schoolmaster: or a combination of all three? Outside the college are we to expect anything from him? Is he to sink his individuality altogether in the work of the college, to occupy himself, like most schoolmasters, exclusively with the routine of teaching work—or do we expect more of him? Is he a professor in any other sense, active in university affairs and occupied with the advancement of learning? Which is more distinctly his proper business, to encourage his students to play cricket or to carry on research in the subject he “professes?”

This is enough to show how many unsettled questions we have on hand. It is true enough that there are unsettled questions in education everywhere, and will always be. Up to a certain point it is the natural and inevitable state of things. What is unfortunate and unsound is, that we find no clear principles anywhere which might

float us over this welter of unsettled questions, if we laid hold of them with assurance. Ideas seem to be in confusion about us. English analogues fail us when we most need them. We want a thread of settled doctrine to guide us through the maze. But each question seems to stand by itself, and opinions take sides according to prejudice and accident. In fine, the whole practice is empirical. We form our opinions haphazard and carry them out by hand-to-mouth methods, experimenting first a little in this direction and then in that.

If this review seem to misrepresent the facts or to overstate the uncertainty, I merely ask to be told where to go for guidance. Do those of us who are engaged in education in this country really know what we are doing, and why we are doing it? Can we give any reasoned account of our work, pointing clearly to the end by which the whole is controlled, and showing in detail how each of the parts of the system conduces to the attainment of the end? If we cannot, we are working in the dark, or at least in twilight. It is only in relation to the end that the fitness or unfitness of the means in detail can be judged. It is because a haze obscures the end or the end is at best dimly apprehended, that so much uncertainty prevails.

This, at all events, is the position from which these papers start. Their purpose is zetetic and tentative; to provoke enquiry and discussion. A stirring of thought surely should result from the Universities Bill and the train of consequences to which it is leading, and this stirring of thought is a third service we owe to the bill. A contribution to the process of discussion is what is here mainly attempted, though incidentally an endeavour will be made to work out consistent principles which might reduce the chaos of controversies to order. Consistent principles on which to settle the problems of Indian education can only be reached by means of a clear and firm apprehension of the end which should be the guiding aim of the whole effort to educate in India. If the conditions in India were like the conditions anywhere else in the world, we might be content to assume the end as familiar. It is just because the conditions in India are unlike the conditions anywhere else in the world that it becomes necessary to examine the differences and qualify the end accordingly. We cannot take the end for granted.

university professors or primary teachers, we are all alike engaged. The work is one and the end is one.

It would seem to follow that, if the work is thus a great and consistent whole with a common end informing and determining the movement at large, there are also common principles according to which the movement should be regulated and guided. To remind us of this is a second great service, which the Universities Bill and the Government Resolution of March 1904 do for us. That there are such principles will hardly be disputed. The statement may even be taken as a truism. But the strange thing is that, when we ask what the principles are, we get no certain answer. Still less can we point to any organized body of doctrine in which these principles are systematically formulated. Great vagueness and obscurity, if not actual confusion, seems to prevail as to the aims and methods of what, in default of a better title, we must call English education. Any attentive scrutiny speedily makes this manifest. For instance, the Report of the Universities Commission incidentally offers a great deal of excellent advice as to the remedy of existing faults in collegiate education, and lays down a number of admirable precepts about educational ends and methods. But these do not form a consistent system, nor is any comprehensive scheme formulated by which effect could be given to the detached precepts in harmonious adjustment. Principles do, indeed, seem to be shadowed sometimes by the recommendations of the Commission; they may be inferred to lie behind certain of the precepts included in the Report; but, at all events, these principles are not distinctly enunciated. Even less can we find any clear statement of the ultimate end. The watchword of the Report is "efficiency," and it is a good watchword. But efficiency is in itself a vague term, as critics of the Report have discovered, and we are free to ask what sort of efficiency, efficiency for what?

Another way in which this uncertainty of aim and want of clearness as to means may be estimated is by considering any one of the many controversies which still prevail in matters educational. Should education be through English or the vernaculars; and, if partly in English, from what age or stage? What is the place of Oriental languages in the scheme of higher education?

Do colleges exist to impart a makeshift education to as many as possible, or a sound education to a number strictly limited? What are the English authors and works best suited to the needs of Indian students? Should the study of English be literary or practical? Should we teach all subjects indifferently, or a limited number of subjects well? Is type-writing properly included in the "universitas" of studies along with agriculture and engineering? Is physical science a necessary part of a liberal education for Indian students, and, if so, how much of it, and up to what stage of instruction, and how far at any or all stages may it be imparted and acquired by books alone? These are some of the chief matters in dispute, and most of them have been with us a great many years. My point is that they seem as far from solution as ever, because there are no authoritative principles to which we can appeal for their settlement. Not only is this the case, but new perplexities crowd upon us from day to day. One of the latest and most pertinent is contained in* Mr. Morison's suggestion that our Indian colleges are not colleges but schools. If that is so, present methods in our school-colleges require much revision. But does the proposition find immediate acceptance? It is at least possible to maintain that our colleges are intended to be colleges, not schools, and should be revised from that standpoint. Other questions loom large upon us out of the pages of the Commission's Report concerning the internal ordering of colleges. *Ought* our colleges to be residential or not? Is it necessary that they should be, or at all events so expedient that any organizing agency that has the means must at once turn its colleges into residential colleges? Or is the idea a fad? What also of the importance of the æsthetic aspect of educational institutions? "Colleges and their surroundings should be made more dignified and more attractive than in many cases they are now," says the Report (p. 60); but that is a little vague, and also lacking in firmness for an authoritative precept. May we rather lay it down as a principle above controversy that it is of fundamental importance that our colleges should not only be housed in spacious buildings of some architectural beauty, but should also be kept scrupulously well ordered? And may we further lay down that this good order

* Now Sir Theodore Morison of the India Council.

includes the grounds surrounding the college and the approaches thereto; the lecture-rooms, libraries, laboratories and their appointments, the dress and bearing of all servants employed there, and of the students themselves, and also of the staff; may we say that there must be nothing mean or unsightly in respect of any of these? And may we lay down as the reason for this demand that, if our education is to have value for Indian students, it must, as a matter of first necessity, inculcate decency, seemliness, and good order in all respects from the least to the greatest? Or is this also a fad—a fancy of the irresponsible idealist?

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as the end of education everywhere. If the end of education in India is the same, it is the same *with a difference*. The first business then is to determine this difference with precision. This will accordingly be the question to be considered first in order.

THE ULTIMATE EDUCATIONAL AIM.

NO doubt, in one sense, the end of education in India is the same as the end of education everywhere, which may be broadly defined as preparation to make the best of life, that is, the best that the abilities and circumstances of each individual admit of, or in other words, to draw out everyone's best capacities. In India, as in England or America, our ultimate object is to fit every child for his station and duties ; and not only so, but incidentally to make the best of his station, to raise it to its highest efficiency and to give the duties a higher range. But our chief practical difficulties in India come from a necessary modification of this aim due to the peculiar political and social conditions. To put the difference succinctly: in Europe we attain the end by adjustment. In India we can only attain the end by re-adjustment—perhaps we ought even to say dis-adjustment. It may be truly said that educationally we have come to bring not peace, but a sword. This is only to say, that the education we try to impart in our colleges and higher schools is unavoidably out of harmony with the circle of ideas and habits to which the Indian child is at present born and bred. If he carries his education far enough, there must inevitably be a clash between the new and the old. His education is not a uniform development, but involves somewhere a break and a new beginning. Many who learn and some who teach may have been unconscious of this; but inevitably it is latent. This break and new beginning, though not exactly coincident with, is closely connected with, a difference of language. At a certain stage in his studies the Indian schoolboy gives up studying in his mother tongue and begins to carry on all his studies in English. This is significant of the changed standpoint. It also imposes limitations. It is impossible for the mind to work with the same ease in a foreign tongue as in the mother tongue; and all the processes of

education are consequently retarded and impeded. We must modify both our methods and our expectations accordingly.

This is precisely what is so hard to keep in view in dealing with education in India, especially when we are trying, as at the present time, to raise standards and improve results. Yet it is indispensable, if we are to realize the better results, to keep it firmly in view; and still more to keep in view the special character of our aim.

Is it possible to define the specialty of aim with any degree of precision? I think it is, sufficiently, at all events, to afford practical guidance in many of our present difficulties. The Bishop of Madras, in a very valuable paper on Indian education in *The Nineteenth Century* for January 1905, writes:—"After all, the main problem in India for the statesman and educationist, as well as for the religious teacher, resolves itself into the question how to change and elevate the character of the mass of the people." I believe this to be absolutely true; so that the ultimate aim of the whole educational movement is most rightly described as ethical; and this applies even more to the problem of higher education, than to the problem of general education. This in effect also was the burden of Lord Curzon's address as Chancellor to the Calcutta University on the 11th February of this year (1905). Without raising difficult and perhaps insoluble questions as to the conflicting ideals of India and Europe, it cannot be questioned that both morally and intellectually, when the movement of the new education took its rise, that is, at the beginning of the nineteenth century, India was in evil plight, both intellectually and morally. Neither can it be doubted that the aim consciously set up by the founders of the new education, whether missionaries, statesmen, or more clear-sighted and enlightened natives of India, was to raise the moral and intellectual condition of the Indian peoples. The state of the Indian people was degenerate. The aim of the new education was to regenerate. Most deeply viewed of all the regeneration needed was moral. But it had also its intellectual and physical sides. The quality which most outwardly characterized Indian society and Indian states in those days contrasted with European was inefficiency—an inefficiency both individual and collective, which the extraordinary position occupied by Europeans in India in the

eighteenth century strikingly illustrated, and of which the British Empire in India is the solid and lasting memorial. The aim of the new education—as soon as disinterested benefit to the subject peoples became an object of Government—was to put efficiency in the place of inefficiency; so that efficiency, individual and political—physical, intellectual, and moral, may be said to be the aim of the new education. The inefficiency was due to want of moral stamina, to physical feebleness, to intellectual subjection to obsolete modes of thought, to a general bondage to ignorance, prejudice, and superstition. Intellectually, therefore, the aim was to strengthen the reasoning powers, so to train the mind as to give it the power of thinking freely and judging independently. Morally it was to restore to Indian character the robust virtues, public spirit, honesty, courage, sincerity, and truthfulness; and, in relation to the intellectual sphere, the moral courage to act upon rational conviction. Later it has been seen that along with this in the classes more highly educated, we have to try and develop physical excellence also, a strength and efficiency of body as a basis for the higher virtues of mind and character. If we say that the aim is to produce *intellectual freedom and moral strength*, we shall have a formula apt enough for practical purposes. Intellectual freedom in its highest expression is disinterested love of truth. This was once a conspicuous virtue of Indian society.

It is interesting to see that even an uncompromising apologist for the old Indian ideals finds in this same disinterested pursuit of truth the supreme need of the time. "Western science must be recognized as holy," says Sister Nivedita. "The idea that science must be grasped and pursued for its own sake." Now the gospel of western science is precisely this, to see the laws of the universe as they are, and loyally to abide by evidence. "Modern astronomy must claim its 'star-intoxicated' prophets in the East as in the West. Geology, physics, biology, and the sublime growing sciences of man, history, and morals, must be felt in India as new modes of the apprehension of truth studied passionately without ulterior object, as the religious experience is now followed at the cost of all." This doubtless is the highest aim. In the difficult field of

practical education we may be content with something a little short of this: we must aim at awakening a genuine interest in things of the mind and forming habits of independent judgment.

Again, we may find in the one word "manliness" the type of mind and character we have to try and produce by higher education. We have to make the educated classes in India more manly, and for that some degree of physical training is required, so that we are not mistaken in making cricket and football and other manly exercises essential parts of our system of education. The aim is to give efficiency, manliness, wisdom, and strength of character. The aim is thus found to be in the truest sense philanthropic. The work of education in India is in a peculiar sense disinterested and beneficent; and it must for a longer time than can as yet be measured have a distinctive and peculiar character. It is education in a double sense; it has to educate the individual, but it has also to educate the community. It has not only to pursue, but to create an ideal. This distinctive character ought never to be lost sight of. The conscious recognition of the special exaltation of aim should inspire and exalt teachers and pupils alike.

But it tends continually to be lost sight of. The very perfecting of our machinery has had a dulling and paralyzing effect. The organization of a department of state is in itself for some obscure reason becoming to individual effort and aspiration. The systematizing of university courses on a vast scale has, as we know to our sorrow, resulted in the restored tyranny of mechanical methods. We need more than ever to recall to mind and keep in view the exceptional nature of the original aim and of the means indispensable to its attainment. In the work of reform awaiting us we need to keep it steadily before our minds and shape every detail of reform by its requirements.

In the purely intellectual sphere we have to cultivate above all else strength and independence of judgment. Our choice of subjects, our definition of courses, our methods of teaching and examination, should be dominated by this aim. Have they been so hitherto? I can answer with assurance in respect of one university. They have certainly not been so kept in view by the

University of Calcutta. But I am not so much concerned with the past, nor with one university. My object is to indicate what must be the universal aim in the work of reform now beginning and the means by which the end is to be sought. The task is very far from easy. It is complicated above all by the necessity—the well nigh fatal necessity—of having to adopt a foreign language as our instrument. The Bishop of Madras most appositely points out in the article already quoted, that the necessity of adopting English as the medium of instruction constitutes here our chief difficulty; and that the supreme difficulty is not in following lectures and text-books or writing the foreign language, but in thinking in it. “The power of independent thought and judgment, weak to begin with, is crushed under the oppressive weight of a foreign language.”

This difficulty cannot at present be removed, but it can be mitigated, if we keep it in mind. *The remedy must be to lighten throughout for Indian students the mere bulk of university courses.* Every scholar who has attained a moderate mastery of Greek, knows that it takes longer to read a page of Greek than a page of English; and still more to assimilate the ideas in a chapter of Polybius or a dialogue of Lucian than the ideas in an equal number of pages of Green or Landor. This is true also, in a less degree only, of French or German. We must keep this in mind when we set tasks to students in Indian Universities. We must deliberately take a lesser standard than English or American or European universities. We must do this consciously and deliberately, always remembering that whatever the task we set, it is indefinitely more difficult for an Indian student than it would be for one whose mother tongue was English. In this way alone can we lessen the temptation to methods purely mechanical and unintelligent. I do not suppose the difference can be expressed in any exact mathematical proportion, but it must be kept in mind. At least we can do this: where we should fix four or five subjects for an English student, we must content ourselves with two or three for an Indian student learning in English. Where we should set the whole of a subject to an English student, we must set a half or two-thirds to an Indian. Where we should expect advanced knowledge from an English student, we must be con-

tent with knowledge comparatively elementary from an Indian student. What we must throughout zealously guard is the thoroughness of the teaching, learning, and testing of the amount, great or little, which we prescribe. It is the training, not the information, which is valuable; the quantity may advantageously be lessened, the quality must be maintained with strictness. Whether we prescribe a play of Shakespeare, a book of Euclid, or a syllabus in Physics or Philosophy, we must insist that what is offered for examination is thoroughly mastered and assimilated not by an effort of unintelligent memory, but by genuine activity of thought.

This caution against aiming at too much is, I believe, eminently needed at the present time, for the tendency has been, and still seems to be, in the other direction. Efficiency is the watchword, and we are to apply European standards. The effort up to the present has been to make the Indian Universities appear on paper to adopt the highest standards. We have so far advanced that we are determined no longer to suffer this to be a mere pretence covering a real poverty and incompetence. We are not going to allow ourselves to be content any longer with slipshod standards. But the other side seems not a little likely to be lost sight of—the limitations imposed by the peculiar circumstances in which we work. For instance, the Report of the Universities Commission sketches a longer and more difficult course for the B.A. degree, including four distinct subjects; and, at the same time, it makes no provision for Honour courses.*

The solution, I believe, lies in the other direction—a comparatively light course, thoroughly mastered for the ordinary candidate, supplemented by ampler Honour courses for those who have adequate mental equipment for them. These must in the given conditions be few, but provision needs to be made for them without excluding the larger body of ordinary ability who cannot, beyond a certain point, surmount the difficulties of higher study in a foreign tongue. We want an advanced course of study for the one, an easy course of study for the other. Only whatever our courses are,

* Calcutta University ultimately kept its Honour courses, but they are still merely extensions of a Pass course, not true Honour courses.

whether longer or shorter, easier or more difficult, we must insist upon it rigidly that both study and the test of study shall be thorough.

All this follows from the acceptance of the principle that the supreme aim of our education on the intellectual side is intellectual strength, the cultivation of the powers of independent judgment. This aim should dominate, as already said, our prescription of courses of study, our selection of books, and our methods of teaching and examining. All cases of doubt must be brought to this tribunal; our decision must be on the side which tends to the strengthening of the faculty of judgment. It will determine a great deal besides in the organization of our schools and colleges, affecting even our method of governing hostels and managing clubs and games. We shall leave as much as possible to the initiative of students, even at some temporary cost in the matter of present efficiency. All our methods throughout must be educative and directed to this great end—the formation of character capable of exercising judgment rightly and standing alone. The narrow intellectual aim thus merges in the broader ethical aim—the formation of strong and healthy character. We have to try and train our students everywhere, first in the schools and after in the colleges, to a recognition of, and aspiration after, the qualities that make up high manly character. We have to purify and to strengthen character. This still higher aim must be kept in view; the intellectual training is subordinated to it. All our institutions should have a direct or indirect bearing on this aim. Our organization of amusements and games must have an ethical aim; we shall not talk too much about it, but we shall constantly be trying to mould character by their means. In doubtful cases we shall refer to the ultimate aim for guidance.

And throughout we shall recognize and endeavour to make every boy and youth in a school or college recognize that the course of life on which he embarks on entering a school or college has a special and exalted meaning, that it is something quite as sacred and significant as anything of which former times have handed down the tradition. It must be undertaken and

carried through in a spirit of reverence. The ends at which it aims are not compatible with an ordinary temper of mind or dull routine performance of duties. It requires faith in the teacher first; and he must do his utmost that every boy or youth under his tuition may learn to feel this faith too. Indian boys come to high English schools and to colleges to attain something great and excellent. Not the passing of examinations nor the winning of certificates and degrees, which help in securing places of emolument, is the supreme aim, nor the chief good to be got by the course of life on which the student enters when he begins his English studies: there is something else greater and more excellent. He has to learn a new way of looking out on life. He has to realize in a new sense his own place in the universe, and his true relation to the laws by which it is governed; he has, at the same time, to learn the place of India among the nations, and the scope of the Empire of which India now forms a part. He has to recognize the opportunities he enjoys as a high privilege, as something he could not have enjoyed if he had never learnt English, and which is a full and ample reward for the trouble he is at to learn it. The day he began this course should be a great and memorable day in his life. It is the high significance, the momentous importance of it all, that we all alike, teachers and taught, need to recognize consciously and keep in mind. Whatever the difficulties involved, the gain is worth the cost. The Indian student has to lose himself in order to find himself again in a higher sense. This is the breach glanced at in the beginning. It must often be a difficult and painful process. A regeneration is a new birth, and pains, intellectual and moral, must attend the process. It is the new birth—intellectual and moral—that is the end of the new learning. The new birth is first for the individual and then for India as a whole—that new nation of which some are beginning, a little too lightly and easily, to think and speak. To carry the process through successfully, faith and courage are the supreme needs.

Regeneration is the ultimate expression of the end. Our working definition remains intellectual freedom and moral strength.

THE WORK OF THE UNIVERSITIES.

IF the end of the new education, most deeply viewed, is the regeneration of a society or group of societies, and if the practical working aim may be described with approximate exactness as intellectual freedom and moral strength, it is certainly in the universities that we should expect to find the end most vividly conceived, and it is the universities which should be the most potent means of bringing the desired result to pass.

The university with its associated colleges is the highest stage of the whole process of education, so far as education may be distinguished from the business of life and treated as preliminary to it. It might seem, then, that the more logical method would be to begin a study of our problems in detail with the lower and earlier stages—to begin with the elements of training in secondary schools, and proceed upward through the higher classes of school to colleges and the university. This is indeed the natural order. But in accordance with a well-known distinction, if the primary school is first by nature, the university is first relatively to ourselves and our present treatment of the subject. It is the problems of collegiate education which are most generally familiar, and the question of university reform which has of late been most prominently before the educated public. Besides, inasmuch as the colleges and the university complete the education to be passed in review, it is in the work of the universities that the aim which informs and guides the educational movement will be most fully and completely realized. It is in the work of the colleges, therefore, that we may expect to find the aim most consciously and explicitly present. It is the graduates signed and sealed with university degrees who are the fine flower of the system. It is these young men who are to carry out with them into the world of action the character and capacities, the intellectual and moral energies, which are to be efficacious in the collective regeneration which is ultimately sought. The system will be known by its fruits. Consequently, it is here, in the university and its colleges, that we can with most advantage study how the end may best be attained, and even judge to some extent the rightness of the aim. A further advantage of the order to be followed is that, if we can determine satisfactorily the conditions of ultimate success

in the colleges, we are in a better position to see what the schools must do in order to make the success of the colleges possible. For the work of the colleges is built on the work of the schools. Accordingly in the present paper the work of the universities will be considered in its widest aspects. In the next the contrasted functions of school and college will be discussed and an attempt made to indicate the way in which the work of college and school may most effectively be co-ordinated. After this the bearing of particular studies on the central aim will be reviewed, and especially the teaching of English. Next some special considerations will be offered as to the conduct of examinations in India. This will be followed by a survey of the special organization of school and college as instrumental to that training of character, which is the deepest and most serious side of the whole education, and to which even intellectual training is subordinate. A general gathering up of the threads with a view to uniting them in a consistent system will complete the scheme.

It must be understood that within the limits of space imposed by the conditions only the most general aspects of the various problems can be dealt with. The aim will be to formulate principles to indicate what would be the means best calculated to attain the results desired. Little attempt will be made, except incidentally, to apply the principles to the actual present practice of the institutions at work (though this application will always tacitly be kept in view), or even to develop the means in detail. At the same time, if the principles are admitted, they can be applied with no great difficulty to the system as we know it. We may turn to the schools and colleges with which we are familiar, and consider if the work is being done successfully and satisfactorily. If we find deficiencies, we may then, if we please, observe how far the system actually working conforms to the principles laid down, and from this go on to conclude in what directions, and by what means, practical improvements are to be sought.

The universities in India influence the general character of education in two ways. The more important is by the ideals set up and by the influences in furtherance of those ideals that can be brought to bear on colleges and schools. The other, to which in the past the control of the university has been almost exclusively confined, is by the

courses of instruction: it prescribes for its examinations and the rules it makes for their conduct. The two are not, of course, wholly disconnected; in fact, the second might, perhaps, be more accurately regarded as a special application of the first. Its importance lies in the effects which prescribed courses and examinations have upon teaching.

I begin with the lesser and more familiar function. The end is to produce on the intellectual side freedom, that is to say love of study for its own sake, genuine pleasure in things of the mind, alertness of interest and, above all, the capacity to exercise judgment independently. How can the definition of courses of study and rules for examinations minister to this? In respect of examinations the means are, perhaps, rather negative than positive. But at least the university can here set before itself the conscious aim of working to encourage right methods of study, and use the utmost care to ensure that its degrees shall go to the right persons, that is, to those who are really educated and who possess the capacity and judgment which it is the aim of education to produce. In particular, there is in India special need to be extremely careful that the examination system does not itself tend to fetter the free action of the judgment nor encourage mechanical methods. There are those who would say that examinations in India have hindered and perverted education. This is certainly the case where undue value is assigned or allowed to the words of a text-book, or too much weight given to translations which may be learnt by heart or to book-work in mathematics or science. In too many cases the aim seems to have been rather to give a candidate a chance of passing by his favourite rote methods, than to compel students to adopt right methods in order to qualify for the distinctions which a university can give. Rules for examinations can at least be framed so as to discourage, still more so as not to encourage, wrong methods. But if we first lay down and publicly announce a signally low percentage of pass marks, next fetter the judgment of our examiners by publicly notifying candidates the precise number of marks to be assigned to each question; if, moreover, when candidates are numbered by hundreds and two or more examiners have to examine in concert, we allow our examiners further to anatomize answers to questions into fragmentary values of marks and half-marks; if papers are of such a length that the questions could only be answered even by

a ready writer in the most superficial way in the time allotted, while at the same time we insist that all the questions must be answered, what do we do but treat our examiners as machines, bind our examination system with the most rigid bands of mechanical quantitative valuation, and do what in us lies to hinder and hamper judgment of real knowledge, of capacity, of taste, of true education. The university which recognizes as right the ideal I have proposed will do the reverse of all this. It will make no public announcement of pass marks, recognizing and wishing the world to recognize that the true estimate of candidates' attainments is not quantitative ; it will make no explicit assignment of marks in its examination papers, leaving the choice of questions to be answered to the candidate and the due valuation of answers to the examiner ; it will trust its examiners to exercise their judgment with discretion, to make and hand down a right tradition in these matters. And to ensure against the danger of papers of excessive length, it will leave something here also to the judgment of the candidate and of the examiner, the extent of latitude for judgment being determined by the grade and character of the examination. In all but the most elementary examinations there should be some little latitude ; in the highest examinations there should be a great deal of latitude. The guiding aim in all this will be that which we set up in the beginning, the endeavour by all means to cultivate capacity and judgment, so that the men turned out by the system may be characterized by some degree of true intellectual capacity and inspired by true intellectual ideals.

But the means need not, I conceive, be entirely negative, that is, confined to abstention from injudicious interference and the avoidance of flagrant errors in the regulations made ; and in India I even think it is desirable that the university should endeavour to influence the conduct of examinations in the right direction. I should hesitate to tie examiners by any rigid rules however well devised ; but it might, I think, be sometimes useful to tender advice to examiners and even to formulate directions *for their guidance*. In particular, it needs to be more widely recognized that examination is a means, and that the means need always to be subordinated to the end, which is right education. Examination is intended to be the test of

right education, and its immediate aim is to sift the candidates who have been rightly educated, and who have acquired the capacities of educated men from those who have not. But it is also, I conceive, something more. It is itself one means of education and should contribute actively to the ends of education. In order that it may do so, we must endeavour to keep the examining closely in touch with the teaching. Examiners should as far as possible be actual teachers of their subject. The examination should have a direct reference to the teaching, and to some extent the teaching must be guided by examining; but we must be very careful that the guidance is in the right direction. With this last purpose in view it would be well if in some, if not all, cases examiners and boards of examiners should draw up reports of the work submitted to them, which reports should be made accessible to teachers by publication. If the examiners were themselves teachers of experience, such reports (which are not altogether unknown in India) should have a very high value. I hope to return to this subject more fully when I come to treat separately of examinations.

In the case of courses of study it is much more easy to see how a wise choice of subjects and skilful definition of courses may contribute to the ends of education. Here the main principle for India is that already insisted upon, namely, the expediency of strictly limiting courses of study and taking care that the extent of courses is not excessive. The reason, as already given, is partly that the education of the Indian student is impeded by the special difficulty, not found elsewhere (not even in Japan), that he is obliged to study almost entirely through the medium of a foreign language. We must, therefore, not institute comparisons between what is prescribed for the Indian student and what is required elsewhere, as if the cases were parallel. We must keep in mind that the Indian student has to overcome a great initial difficulty, not the learning of, but the learning *in* a foreign language, and we must accordingly set him a task less in amount, though we must not relax standards in any other respect. This applies specially to English literature, to History, Philosophy and Science, in a less degree to Mathematics; and not at all to oriental languages. This also must be said, though somewhat in opposition to present tendencies. However desirable it

may be on general grounds to give a more practical bent to the studies of Indian students, to teach Physical Science and kindred subjects in preference to languages and literature, this must only be done on two conditions. The one is that we only teach these subjects where there is an adequate staff and adequate equipment for practical study. The other that we teach and test the practical subject really practically; that physical science means first and foremost "practical work," familiarity with the actual forces of nature and the actual handling of apparatus. If Physics and Chemistry and Biology and Sanitary Science are merely taught out of a book without any first-hand acquaintance with the "things" with which these sciences deal, we have all the defects of the purely literary training back again without any of the compensating advantages which may be hoped for from literary education, the quickening influence of great ideas and the cultivation of taste. At the same time it should be remembered that the need is quite as great to teach literary subjects practically as to put practical subjects in the place of literary. Psychology, Ethics, Logic, even Metaphysics may be taught practically no less than Physics and Chemistry, if it is recognized that their problems are real problems and that the individual mind is to be exercised to find a solution, instead of taking second-hand solutions from books. The elements of feeling and thought are entities at least as real as atoms and ions, and, provided that we treat them as such, the sciences that deal with them are practical. In the same way the study of history and literature may be equally practical. Grammar is certainly a most practical subject, if rightly taught; and so is Philology. History is practical when we imaginatively reconstruct the past, and look upon the past as having a living relation to the present; when we make use of maps and pictures and of original documents, and weigh the problems of history by active sifting of the evidence recorded. Literature is practical, when we exercise our own reason upon its problems, and train our own judgment in its appreciation. It is, therefore, of great importance to equip the teaching of these subjects also with all necessary apparatus, maps and photographs and plans, dictionaries and books of reference. These things are real and practical enough, and the student of literature should be trained in the handling and use of these no less than the student of

physical science in the handling of test-tubes and electrometers. We want not only to introduce more science teaching, but to make the teaching of literature more scientific. Our aim must be that not only one or two subjects, but all subjects shall be thoroughly taught on scientific principles; English literature as much as Physics; Oriental languages no less than English literature.

It remains to attempt to deal under the same limitations of space with the larger and more vital question of general control. If our definition of end is accepted in its entirety as including educating of character as well as educating of intellect, and even as putting the education of character first, certain very important and far-reaching conclusions can be affirmed at once without further discussion. Given the known conditions under which Indian colleges work, it may be laid down that the resident type of college has become a necessity. In no other way can the more general education of character through a common life and discipline be efficaciously attained. Everyone familiar with the working of an ordinary Indian Arts College is aware of the manifold and distressing hindrances to all the activities of the common life,—save and except that of lecturing and hearing lectures,—that are opposed by the dispersion of students after college hours. A "college" ordinarily remains in being for a space of five hours during which lectures are being delivered. For three, or four, or five hours the student is taking lecture notes, and for three, or four, or five hours the lecturer is lecturing. When the allotted period of labour is over, student and lecturer are alike wearied out, and need before anything else to go home for rest and food. For the remainder of the day the college, properly speaking, is not in being. College meetings of every description are consequently effected with the greatest difficulty, whether their purpose be literary, or 'oratorical' or purely social. College athletics are carried on in face of similar difficulties. It is impossible to get all students to join in them; it is often impossible to collect students at the right time, or in sufficient numbers. Similar difficulties arise in the case of college libraries, club-rooms, laboratories. Few students can make much use of these indispensable aids of thorough education; students who live at a distance can make little or no use of them. 'The collegiate life' is hampered and hindered in a score of ways under the non-residential

system. But for any effective education of character we must have the collegiate life; to give efficacy to the collegiate life, we must have the residential system. In order then to get effective education of character, and much of the criticism of the last few years has been directed to urging the necessity of the education of character, we must make our colleges residential. It would seem, then, to follow that it is the duty of the universities as the supreme guardians of education, and the upholders of educational ideals, to institute a policy involving a gradual change from the non-residential to the residential character. The universities have been armed by the Universities Act with the requisite powers of effecting this change, and they should not be slow in putting them in force. Whereas now non-residence is the rule and residence the exception both for students and professors; in the course of a few years residence should have become the rule and non-residence the exception. When this great change has been brought about, the institution of a right control over colleges, which at present bristles with difficulties, will be a comparatively easy matter.

Perhaps it may seem strange that I have reached the end of this paper without so much as mentioning the foundation of University professorships and the endowment of "research." Assuredly it is not from slighting the value of the highest branches of the work of a University. But the plain work-a-day educational work we are affecting to do, and are to a certain extent doing, is so important and on so large a scale and so difficult and so deficient that I feel it must and should engross by far the largest part of our thought and energies for a long time to come. The improvement of collegiate education is a possible undertaking, and lies close to our hands. The encouragement of research has in India a somewhat hazy meaning and its attainment is remote. We play with "research students" here and there—and so far we do well; but the spirit that will produce true research students in any number has yet to be created. The production of this spirit in its education widely is at present the most important work for the University, and this I look for as the outcome of the ideal sketched in these pages. We may be content for the present if by the means indicated above we can produce in a considerable body of Indian students liberality of culture, openness

of mind, a disinterested love of knowledge, and the enquiring spirit. The discipline of ordinary collegiate studies, fostered in a healthy collegiate life, might produce this much. When we have this in a genuine sense, the rest will follow of itself.

COLLEGES AND SCHOOLS.*

THE justification of the main practical conclusion reached last month in dealing with the work of the universities, namely, that we ought henceforward to aim deliberately at making our colleges residential, lies in the greatness of the work that has been undertaken. The end of the new education is so high, the process to be effected by its means so difficult and so critical, that only the most refined and carefully adjusted means are adequate to our purposes. Only the best has a chance of success: if we cannot have the best, we had better leave the task alone. Accordingly, if the resident system for colleges is admitted to be, or can be reasonably shown to be, better calculated to achieve that training of mind and character which has been declared to be the ultimate aim, we must have the resident system. But having regard to other circumstances, and, in particular to our limited resources for higher education, this conclusion carries with it the unavoidable implication that this best education can only be for the few. Consequently, when we have settled the principles of the highest education, a number of most difficult problems will remain on our hands in respect of the education of the many, who require high education, yet who are not fitted for, or for some reason cannot hope for, the highest. This consideration makes special difficulties when we go on to review the work of the schools in relation to university education. The secondary schools must provide for the education of a great number, besides those who have a reasonable prospect of becoming college students. We are face to face with an

* It is to be understood that the schools spoken of in this paper are solely schools of the most advanced kind for boys which give the education next below and leading up to the education of colleges. What is said, therefore, applies (approximately) to what in India are technically called High English or Upper Secondary Schools.

alternative. Either our secondary schools must provide training for many other careers besides a course of study in a university, or we must have special schools whose single aim shall be preparation for the university. To state the latter alternative is, I think, to reject it; although, curiously enough, seeing how commonly the upper classes of secondary schools are dominated by the Entrance or Matriculation Class, this would seem in effect to be very much what we have at present. But it will be agreed at once, I think, that the ordinary secondary schools ought to have a much more general and comprehensive aim than preparation for an examination designed as a test of admission to a university. The education of the schools should have a certain completeness in itself. It should not be too closely subordinated to an Entrance or Matriculation Examination. It is expedient, therefore, I conceive, that the University Entrance Examination should be dethroned from its present commanding position in school education, and its place taken generally by a comprehensive scheme of School Final Examinations, or by leaving certificates given by the authorities of the school. As to the actual connection with the university other alternatives open out. There may be classes exclusively preparing for the universities though these I am inclined to deprecate. There might be, as in Japan, a special higher class of schools intermediate between the secondary school and the college. These would do very much the work at present done in the first year or two of university courses. The development I should myself advocate is a perseverance in the all-round improvement of the work of the schools, and especially a marked raising of the work of the upper classes and of the age at which boys leave school. I conceive boys should remain at school to a later age than is usual now, except in the case of the backward, and that we should endeavour to carry the education of the school to a much higher point. The highest classes of secondary schools should prepare for the university, but not exclusively. The natural close of the school career should be the certificate obtained by passing the Schools Final Examination, and this should be accepted as sufficient general qualification for admission to a college. The only special test required further by the college or the university should be a test in English, confined to an essay and such other test of that practical

command of English, which university courses postulate, as might be desired. The necessity of this one special test is, I hope, sufficiently understood at this date. It has been reiterated in a variety of forms in the discussions involved in, or arising out of the work of, the Universities Commission. It is foolish and stultifying to admit any student to courses of study carried on in English, who has not the equipment of English made indispensable by the circumstances. We require then necessarily a special test of fitness in respect of English. In all other respects a Schools Final Examination should furnish ample qualification.

As regards the relation of school and college the cardinal principle that needs to be laid down with absolute firmness and in the most unqualified manner is the entire separation of school and college. This principle was distinctly affirmed by the Universities Commission, but not with sufficient confidence and emphasis. In relation to the end here kept in view it is an absolute first principle, admitting of no hesitations or exceptions. The complete separation of school and college is expedient on various scholastic grounds, but the main determining consideration is that of discipline and character. We have laid down, and we hold to it, that the deepest educational purpose should be in India, as everywhere, the training of character. Character is trained by discipline. To attain the best results, that is, to train most effectively, to mould and strengthen character in the best way, the discipline of school and college must be dissimilar. In schools the scholars are boys. In colleges the students are young men. Boys should be strictly under authority; they are not to be treated as fully responsible moral agents, though this does not imply that they are not to be given any responsibility nor educated by trust. Young men in colleges are approaching the time when they must be fully responsible members of the community, must take their future entirely into their own control and stand or fall by the character they have developed under discipline. There is not, of course, any hard and fast line that can be drawn separating the man from the boy, any more than there is any exact dividing-line between childhood and infancy. But for life's purposes some dividing-line must be arbitrarily fixed; and educationally the most convenient dividing-line is that made by leaving

school. A schoolboy is unquestionably wholly under discipline. Coercive discipline is in his case at its maximum. He must obey without fully understanding reasons—even for obedience sake. With the young man, whether at college or in business, it is otherwise. Discipline there will be for him, even as for all of us there is discipline throughout life: but it is now much more the discipline of circumstances. He has become a fully responsible moral agent. Discipline is for him far less coercive and much more in the nature of an appeal to good sense and conscience. The boy must obey rules because they are rules: it is a good thing if he understands their reasons, but it is not necessary that he should. The young man should obey rules because he understands their beneficial character and sees them to be right and good. He acquiesces in the discipline of his college, because he realizes its usefulness. We appeal much more to his reason. Now if we blend the two forms of discipline, or try to combine both in one institution, the result is confusion. Our point of view should be different in dealing with boys and young men. We cannot appeal to both in the same terms: we must adopt one point of view or the other.

This is what makes that weakening of this distinction, which has become inveterate in India, so deplorable. Historically it is comprehensible enough. Schools naturally came before colleges; in a great many cases the college actually grew out of the school. First, there was a school of a very elementary character, which worked on by degrees to more advanced teaching. Then it taught up to the Matriculation standard. Next a college class was started, working up to the F.A. or the Intermediate examinations. Finally a college department was separated off and expanded into the college, sometimes, however, still located in the same building as the school and partially under the same management; and in some cases this association subsists to this day. This progressive expansion of the school, the genesis of the college out of the school as a spore is thrown off by a plant, had, without doubt, its original justification. It was the line that progress took, owing to the circumstances in which the new education in India arose. It may not have been the best origin for a college, but the efforts which produced this result were altogether praiseworthy.

at the time, the ambition which was the impelling force was the right aspiration for improvement. Nevertheless, this mode of origin has ultimately proved a hindrance and a stone of stumbling. It has led to the obscuring of the distinction between college and school and to a habit of regarding the college student as a rather older schoolboy. It has in some cases weighted the management of a college with the (almost necessarily) perfunctory management of a school. But the unfavourable effect of such association on a college is trifling compared with the unfavourable effect on the school. When the entrance class and college department were started, it was natural that they should come to be thought of most importance, and should draw to themselves a preponderant share of interest and attention. When the college separated from the school, and when further a higher class of teachers was assigned to the college, the tendency was for the younger institution to overshadow the elder. When a college and school have remained associated in one building or group of buildings, the college has proved very like the cuckoo in the sparrow's nest that by its larger size and greater power of making its wants articulate has absorbed an unfair share of the common nutriment. If this enquiry were followed out, I believe it would be found that the evolution of the college from the school has had a depressing effect on schools in general. In this way what was originally a useful line of development has come in course of time to exercise effects that are positively pernicious. This appears to be still more true if, as I think is the case, the ambition of the more successful schools has too often been—not to raise the efficiency of the school to the highest point but—to develop a college department. The ultimate result seems to be that, whereas we have some passably good colleges in India for native students, we have no good schools.*

Whether the causes are or are not as I have suggested, the fact, I think, is undeniable that we have as yet in India no good schools—no schools at any rate which are good enough, certainly no *great* schools. This brings me to the main contention of this paper—

* This means 'good' judged by the highest standard, schools which need not shrink from comparison with the best schools on the English Public School model.

the imperative need of better public schools in India. Opinions may differ as to the merits and demerits of High English Schools, both public and private, planted liberally over the Indian peninsula, but I have little doubt that there will be universal agreement as to the need of greatly raising the efficiency of the schools and the character of their work. But I doubt if all the implications of this statement are sufficiently realised.

If the schools are not good and we do not make them better, to what profit is it, I would ask, that we go about with such vast outcry and effort to improve the colleges? The colleges build on the work of the schools. The fact is self-evident; every one acknowledges it. But if the work of the schools is bad, still more if it is radically bad, what reasonable hope is there of getting anything but very imperfect results from the colleges? It is in the schools that the scholars' minds are most plastic; it is there that habits are formed, it is there that the deepest lines are laid for the development of character. I do not wish to exaggerate. Decisive development of mind and character takes place at different stages of life and under widely different kinds of influence in different individuals. For all that, there is substantial agreement that, in the long run and on the average, the years of school life—say (for India), from seven to seventeen—are the most important years, that in these years the most vital tendencies of character are determined. At all events this will, I believe, have come within the practical experience of every teacher in an Indian college. Certain difficulties he encounters spring from faulty teaching and faulty "morale" in the schools. Students come to colleges with their habits of study, their ideas about examinations, about discipline, about the relation of work and play, about the uses of books, about the ends of education, to a large extent determined. I by no means say that all that is learnt in the schools in respect of these things is bad. Yet certainly in respect of much to which he attaches the utmost educational importance the college lecturer will be conscious of a certain 'antagonism' of atmosphere, a kind of passive resistance and apathy in his classes. His exhortations fall

flat. He speaks to dull ears. A great deal of this I put down to faulty beginnings in the schools; to the inculcation of wrong principles, or, at all events, the entire failure to inculcate right principles. I qualify my statements as much as possible to be on the safe side. My impression is that they might be made even stronger and more sweeping. Every teacher must make his own comment. But to take only the instance of methods of study. Is it possible that the Indian student would be so firmly wedded to the utterly wrong method of learning everything by heart, if he were carefully taught to learn in the right way from the first?

It is a necessary implication, then, of the end here kept in view and of the means essential to its attainment that we must bestow the same attention and pains on the schools as we are at the present time bestowing on the college and university. Logically and practically the school is even more important. For the school can work without the college, but the college cannot work without the school. If to attain our educational end we must have a certain number of the best possible colleges, still more must we have a certain number of the best possible schools.

Two main conclusions, therefore, stand out from the present discussion—(1) the need of creating a much higher class of the school than any at present existing, either by a gradual raising of the efficiency of High English Schools, or by the foundation of new schools of a higher type; (2) the complete separation of schools and colleges as institutions in respect of situation, government, and discipline.

If these two main contentions be granted, then the relation of schools and colleges may be conceived somewhat in this way. The school will lay the foundations of sound education in all its branches—moral, intellectual, and physical. The colleges will build on the foundations of the school. The education of the school will up to a certain point be complete in itself, but it will at its highest stage be closely related to the still higher work of the colleges. The discipline of the schools will be strict in order that habits of obedience, order, punctuality, method may be formed there. No irregular or

slipshod ways will be tolerated. The principles of honour, of honesty, of truthfulness, of public spirit will be carefully inculcated. Physical training will form an essential part of school education, not only by means of drill and gymnastics, but also of games of a more social character, in which the principles of co-operation and of individual self-reliance are brought into active working. This is the special usefulness of such games as cricket, football, and hockey. Reverence for the school as an institution will be sedulously cultivated, and will be a prime object of the discipline of the place. Masters will set the example by their active interest in all the social activities of the school, and their presence either as leaders or spectators in the playing-fields. In view of all the latter-day criticism of the English public schools, I had better not say we must model the Indian public school on the English; but at all events we must make every effort to get an infusion of the English public school spirit. And I will here hazard a conjecture which to many may seem whimsical. If the effort and expense which have been lavished on the college during the last forty or fifty years had, in the first instance, been bestowed upon the schools—in plain English, if we had imported school masters instead of college professors, our results to-day would have been of a more solid character.

On the intellectual side the schools should give a thorough grounding *on sound principles* in all the ordinary school subjects—in mathematics, in the mother-tongue, in the classical languages of India, in History and Geography. And sound principles will certainly imply *trained* teachers, and teachers not nominally but really trained. In particular, having regard to the necessities of the new education at its highest or university stage, secondary schools in India must give a thorough practical grounding in English. For English should be learnt at the school, not at the college. The best English scholars would go on to the colleges and be in a position to profit fully by the more advanced instruction of the university. Moreover, in the school the study of English should be mainly a study of language, directed to a practical mastery of English for reading, writing, and speaking. At the college the study of English would be mainly a study of literature. In this way, I conceive, the work of school and college in respect of English would be satisfactorily co-ordinated.

In other subjects the co-ordination, though not so special, would be on similar lines. The school should lay the general foundation in all subjects, the college should build on this the special higher training. Not that all special advanced study should be excluded from the schools. Scope for this is precisely what is demanded, when it is laid down that the status of our schools should be raised. The boy with a mathematical bent, the boy who would later become the Honours student in mathematics, should be encouraged to follow his bent while still at school. Similarly with other studies the boy with a taste for literature or languages should be encouraged to read widely, to carry his studies of languages far beyond the average standard. These details would be matter for the special arrangement of a fully qualified headmaster and staff. The consideration of importance is that boys should be kept at school till a suitable age, while their powers, mental and bodily, are ripening, and at the same time should be given full opportunity to advance on the lines of their special aptitudes while still at school.

The question of science-teaching offers peculiar difficulties. Few, I suppose, question the usefulness, on grounds both general and particular, of making the elements of physical science a part of general education in India, if it is possible, and where it is possible. But whether it is possible generally to-day in India is extremely doubtful. One condition of the usefulness of such science teaching is that it should be taught by properly qualified teachers. A second is that the school, where it is taught, should possess the requisite equipment. Each of these conditions is at present difficult to fulfil. It would seem advisable, therefore, to introduce science teaching in schools very gradually, and to make the introduction of such teaching in schools strictly dependent in each case on the fulfilment of these conditions. Where they can only imperfectly be fulfilled, it would seem to be better to perfect first the equipment for the teaching of other subjects. History and Geography, and even to some extent languages, require the equipment of apparatus, and such equipment can be made adequate at much less expense than is involved in furnishing a school laboratory. Let the more easily attainable object, then, be secured first and our schools thoroughly well equipped with wall-maps, plans, diagrams, illustrative pictures and books of reference.

When this has been done, it will be time to consider the introduction of science-teaching on a wide scale.

The principle kept in view throughout in these recommendations is the necessity of insisting that whatever is taught shall be thoroughly taught, and to that end restricting our effort to such undertakings as are well within the compass of our available resources. On the principles here advocated it will always appear better to teach a few subjects well than to teach many indifferently, to teach a small class thoroughly than a large class badly, to have one good school than ten that are weak and unsatisfactory. Hitherto with the best intentions in the world we have erred in trying to do too much with inadequate resources. Statistics have been our undoing. The demand for universal education, the duty of not being behind the times, the necessity of appearing to be always advancing, have driven us on. But some of the voices that assail us are misleading and must not be listened to. We must do the utmost that we can, and for a very long time that utmost will be too little. But whatever the urgency for extending the field of education, we must refuse to widen it beyond our ability to do good work. This applies alike to primary, to secondary, and to university education. Our primary education must be restricted to the simplest essentials. Our secondary must be limited to the extent over which we can secure the necessary high standard of instruction and discipline. Our colleges must be only so many and so large as we can equip with an adequate staff and make fully efficient according to the standard imposed by the ends we follow. If we hold fast to these root principles, we can extend the area and scope of education of every kind as opportunity offers and our resources admit. Everywhere we must build soundly; and to build soundly we must build slowly. But alike in primary, in secondary, in technical, in collegiate education, the recognized condition of advance and expansion must be that our work in its kind is *good*.

THE TEACHING OF ENGLISH.

THE absolutely fundamental position of English as the basis of collegiate education is obvious from this or any other consideration of the subject. Every one acknowledges it as soon as the point is plainly put; it is an avowed principle of the system of instruction in our

schools. And yet the full significance of the admission seems in some respects to have been strangely ignored in practice. The nature of teaching and learning in the colleges implies not only that English shall have been taught as the subject of first importance in the schools, but that it shall have been successfully learnt. Without the fulfilment of this condition the education of the college becomes sheer buffoonery. And this it has too often been and is. No more need be said here to enforce the necessity of still pressing the importance of the teaching of English.

The teaching of English in the sense here meant must be done in the schools. Herein, in another way, appears the momentous urgency of having good schools and good teaching. Unless the problem of teaching English in the schools can be satisfactorily solved, the measure of success in University education must continue very imperfect. For success, English has not only to be learnt, but thoroughly assimilated. Now, the successful acquisition of a foreign language must nearly always be a difficult and lengthy process; there is here no royal road to success. But there is a difference of good and bad methods, and good method may do much to lighten the difficulty of acquisition and to give better results. The circumstances which best favour the ready acquisition of a foreign language are those which approximate most closely to the primitive method by which language is originally acquired; that is to say, continued residence in the country where that language is spoken, and complete dependence on the foreign language for communication. This is why there is so marked a difference in the English of those Indian gentlemen who have spent three or four years of study in England. This natural method does not, however, exclude the grammatical and literary study of the language. For the best results the two must be combined. We cannot, of course, even approximate to a realization of these natural conditions in any but very exceptional cases in India. English has generally to be learnt under artificial conditions. The country where foreign languages are most successfully taught under artificial conditions appears to be Germany, and the success that is there attained seems to be due to as close an approximation as circumstances admit to the natural method—of course in combination with literary study

This, then, is the school in which we must learn. The scientific method is the natural method. The direct or natural method is already talked about in India; but it does not appear that as yet the method has been very extensively put into practice. Here, then, is a direction in which a very marked increase of success in the teaching of English in Indian schools is to be looked for. Every teacher of English in an Indian school—from the lowest class in which English is taught to the highest—must be induced to understand and ponder the principles of the natural method. A most interesting account of an experiment in teaching English by the direct or natural method at the Aligarh Collegiate School appeared in *Indian Education* for January 1904.* What is there described and set forth by Mr. Cornah as an experiment must be adopted and carried through strenuously as an authoritative method—this or something like it. Indian schoolboys must be taught from the first to associate English words with the things and ideas they signify, and must be patiently practised in the independent construction of simple English sentences. They must be taught to speak English at the same time, or even before they are taught to read and write English. Immense pains must be bestowed on the early stage. Boys must be encouraged as early as possible to think in English, to construct their sentences directly without the mediation of their own tongue. If the importance of thus making the whole process of learning as far as possible a natural one were impressed on all teachers of English universally—and especially on the teachers of the classes in which the teaching of English is first begun—and their efforts were everywhere directed to introducing this natural method in their every-day work, there would undoubtedly be a marked change for the better within a few years. At present only a few teachers here and there recognize the importance of ceasing to rely wholly on the mechanical methods of grammars and phrasebooks, of transforming their teaching by calling in the aid of the direct or natural method. When all teachers everywhere are inspired by these more stimulating conceptions of the teaching of language and are diligently and patiently following them,

* "A Rational Method of Teaching English." By J. R. Cornah, M. A., Aligarh College. *Indian Education*, Vol. II., No. 6, pp. 292-295.

a general raising of the standard of English in all schools cannot but result. Hope lies therefore in spreading a knowledge of these methods. Especially great is the importance of winning to this persuasion the teachers in the classes in which the study of English begins. Very much depends on these first teachers of English.

In this connection the question of the possibility of having English taught in Indian schools by Englishmen attains special interest. It is by no means, however, a foregone conclusion that, if it were possible, it would necessarily be desirable to have English so taught by Englishmen. In England and America the present tendency is to have French and German taught by English (or American-English) masters. In Germany English is usually taught by German masters. It is argued that a foreign language is better taught to boys by a fellow-countryman who at least understands from his own experience the difficulties his pupils are likely to find in the foreign idiom. "A pupil learns a foreign language most effectively from one who is his countryman and a trained teacher, and who has himself been compelled to master its difficulties."† So it may be claimed and conceded that in certain respects Indian schoolmasters, (when trained), will teach English more successfully than English masters would. But there would still remain some weighty reasons for keeping English headmasters where they are found, and where they were not found for introducing them or bringing them back. The advantages from the point of view of organization and discipline will be considered later; from the present point of view there is this to be said. The circumstances in India are peculiar. For a variety of reasons the Indian schoolboy who is marked out for any career of ambition requires to master English more perfectly and more practically than (ordinarily) the English or German schoolboy needs to know French. Moreover, the teacher of a foreign language, when a foreigner, can seldom attain to that perfect mastery of the finer shades of idiom which comes naturally to an educated native; hardest of all is the acquirement of a good pronunciation. Natives of India can, therefore, seldom if ever afford that final authority in English idiom and

† The *Education Review* for February quoted in the *Journal of Education* for April 1904.

pronunciation which the Indian schoolboy requires. And this is to take the most favourable examples. In a large proportion of cases, as is well known, the English of the teachers is very faulty. Not only is English being taught to Indian schoolboys by bad methods but often the English taught is itself bad—or rather in certain respects it is not English at all, but English as modified by the linguistic habits of the natives of India. This point is touched in the highly suggestive paper on the "Future of English" by the Rev. R. MacOmish in *Indian Education* for May. I am inclined to think that Mr. MacOmish rather underestimates the danger to English through the habitual use of "many words and phrases with a slightly perverted meaning." It is a serious and growing danger at the present time and needs to be deliberately faced. He significantly adds: "If Indian teachers are trained by Englishmen, this evil should be minimized, if they are trained by Indians, the evil will tend to perpetuate itself." But this last, unfortunately, is what we have at present in vastly overwhelming proportion. Indian schoolboys learn English from teachers whose English is defective and who actually instil their own faulty idiom into their pupils. These faults are seldom completely eradicated even by passing through a college; the pupils become teachers in their turn, in some cases without even passing through a college, and the evil grows inveterate. Training colleges adequately staffed by Englishmen, would, without doubt, do much to counteract these undesirable tendencies. Such colleges on a sufficient scale should be a first object of educational policy. But seeing the importance of teaching English rightly from the beginning to those who are to carry their education to the highest point through English, we also want, if it can be made practicable, a class of schools, with two or more English masters on the staff.

Apart from the help which is to be sought from newer methods of teaching language, there are one or two quite simple expedients within the resources of every teacher, which would contribute appreciably to the improvement of English. The simplest is resolute insistence upon, and diligent practice in, the elementary rules. It cannot be due to the difficulties of English idiom that so many Indian schoolboys, and college students too, continue to put a singular verb with a plural subject, to confuse their pronouns,

mix up their tenses and fall into a number of other quite elementary mistakes. If teachers would realize the importance of these simple matters and take care to convince their pupils of their importance, a great improvement could not but follow. For the improvement of English is not in all regards a subtle and intricate matter; in certain respects it is extremely simple, a mere question of ordinary attention and taking pains. There seems to be a natural predisposition in the Indian schoolboy to assume that rules do not matter much, that there is no need to be exactly right; that it is enough to be somewhere near right. A loose and slipshod habit of mind results in a loose and slipshod style. In correction of this tendency the schoolboy must be taught that in language rules* matter very much; that it is very important to be exactly right in such matters, that in fact precise correctness is everything. Headmasters and Inspectors of schools should never weary of impressing the importance of these simple matters on class teachers; class teachers should see to it that their pupils are under no misconception about them. It is all a question of firmness and perseverance.

Another simple matter is proper training in the use of a dictionary. Boys should be taught, as soon as the earliest stages are passed, to use dictionaries constantly and carefully and with discrimination. Every boy should possess (if necessary, he should be compelled to buy) two dictionaries: a Vernacular-English and an English-Vernacular dictionary; a little later he should possess a standard English dictionary also. He should be made not only to have them, but to use them. This should, if necessary, be one of the subjects of class instruction, as much as grammar or analysis.

A more difficult matter is the test of the English acquired. The natural method must be supported by ceaseless practice in the form of class exercises. It is by means of these that the elementary faults spoken of above must be eradicated. Indian boys must be impressed with the heinousness of a false concord in English, just as much as English schoolboys learn to shudder at a false concord in Latin. The construction of simple sentences to test the simple rules is probably the best form of exercise. Sentences embodying faults for correction, sentences

* That "rules" in language are only accepted habits of speech is a consideration which need not trouble us here.

with words left out and other positive deformities are to be deprecated. They suggest the very errors they would correct and make the first beginnings of wrong association. The care must be to form the right associations from the first and to strengthen these by frequent repetition and variation. Set examination papers should follow the same lines. Composition exercises should be carefully graduated and special pains bestowed on simplicity of structure. Boys must be taught from the first that the simplest style is (for them) the best; that composition exercises are not an elaborate game, but a means of learning to express meaning clearly. There should be systematic teaching of composition. This might well be considered also in colleges.

The value of translation into English and from English into the mother-tongue needs little insistence now-a-days as precept, but it probably needs very considerable extension in practice. The only limit to these various exercises is the limit of the time and energies of scholars and teachers. Otherwise the more the better.

Another difficult matter is the choice of books. The earliest stages seem fairly well provided for by series of excellent readers and primers already widely in use. There is still greater wealth of such readers in English awaiting translation and adaptation. At the highest stage there is the whole range of classical English literature. The difficulty lies in graduating books for reading over the intermediate stages, when the "Reader" is properly laid aside and the pupil begins to read literature in the full sense, that is books written to be read generally, not designed narrowly for teaching purposes, and addressed to the great public, not to the schoolboy in particular. This stage covers all the higher classes in secondary schools, including what is at present the Entrance or Matriculation class and, as things are, perhaps the First Arts or Intermediate classes in colleges also. What English books suitable for a schoolboy's reading are written in the simplest English? Who shall even define what is precisely the simplicity we want? It must be obvious enough that an ample body of simple English writing of a sufficiently high literary quality must exist, if we can only establish some sort of canon of fitness; and it is desirable to arrive at a list of complete works rather than selections. The Bible is conspicuously such a book, or rather

collection of books, and none could be better fitted for our purpose than certain of the many books of the Bible, if the religious complication did not oppose difficulties as yet insuperable. Bunyan's *Pilgrim's Progress* is another example of a style of perfect simplicity joined with the vigour and imagination which make writing interesting; but the objections which stand in the way of the use of the Bible recur here also. Probably also we should do most wisely to confine our choice to works written not earlier than the beginning of the nineteenth century. Best of all are those which represent the English of to-day. Common sense is no doubt a fairly sufficient guide in this matter, and common sense has, it may gladly be admitted, actually proved a fairly sufficient guide. There are no very glaring mistakes to cry out against. At the same time I cannot but think that a little special collective thought and effort devoted to this subject would be of great profit. There is room, I think, for a committee which should set itself to review the literature of the last hundred years with the special purpose of making recommendations for general guidance in the choice of English books for Indian schools, and I think that a formal report of the results of such a survey would be of real utility. We do not want fixed prescription; but a systematic statement of principles with a list of books recommended would often give useful help to headmasters and others responsible for the choice of books. Though we know enough, perhaps, for practical working purposes, a careful thinking out of the whole problem would enable us to discriminate with greater assurance and success.

I am myself much struck by the difficulties arising from the complexity of modern life in Europe and the introspective tendencies that go with it. In consequence of these modern literature in the full sense is not that best suited to the mental condition of Indian students; it is in these respects, perhaps, the least suited of all literature. How is this deficiency to be reconciled with the practical requirement of English of the most modern type? I fancy I discern a solution, a partial solution at all events, in seeking the co-operation of Greek and Roman antiquity as an element in the higher education of India. The life of the Greeks and Romans—supremely at all events

such a life as is described in Homer's *Odyssey*—is far nearer the standpoint of the Indian mind than is modern English life. At the same time by using the best ethical influences of classical antiquity we should avoid that very objectionable savour of self-praise, which inevitably hangs about the too frequent presentment of English ideals in India. No susceptibilities can be offended by an Englishman's praise of what was best in Greece or Rome. English ideals, English heroisms, English achievements are, I fear—it matters not whether the reasons for this are good or bad—suspect to Indian ears. But if we hold up to admiration the daring of Jason, the self-sacrifice of Alcestis, the gallantry of Horatius, or the public spirit of M. Curtius or Publius Decius Mus, we are free from any charge of self-glorification. Salamis makes as good a story as the Great Armada. Putting the matter quite practically, there are simple versions of the stories of the *Iliad* and *Odyssey*—I am thinking of Professor Church's, published in excellent editions by Seeley at sixpence, which would make admirable readers for the bigger classes of Indian schools. Two other books recently produced in a beautiful form and offered at a wonderfully cheap price are "*Favourite Greek Myths*" by Lilian Stoughton Hyde, and "*Legends of Greece and Rome*" by Grace H. Kupper, both published by George H. Harrap. I definitely suggest that these books, and books such as these, would make the best possible literature for Indian schoolboys. Incidentally I may add that for the schoolboy who is to become the college student and study English literature at large some familiarity with Greek and Roman legend and mythology is a practical necessity. As it is, Indian students are greatly hampered for the want of it.

Over and above the careful selection of special works for special study in the class, the necessity of supplementing this by wider general reading must not be overlooked. The close study of a few chosen books will never give the varied vocabulary and the facility which the Indian student needs for a college course of study. So schoolboys must be advised and induced in all possible ways to read widely. Biographies, histories, books of travel, essays, novels, even newspapers and magazines must all be pressed into the service, the only condition needing to be observed—but this is a most important one—being that

the literature should be good of its kind. In particular the great advantages from this point of view offered by the very extensive periodical literature of the day, including first-class newspapers, should not be missed. For this, among other reasons, every college and school should possess its Reading Room or Common Room, taking in a regular supply of the best periodicals. The student's reading should be as wide as possible; at the same time he should read only the best. Nor is this last condition, using the word best in a modest sense, hard to fulfil. The general literary standard to-day is a fairly high one both in books of general literature and in magazines and newspapers of the first rank. The Weekly Edition of *The Times* alone supplies the essentials of a liberal education: *The Graphic* and other illustrated papers, *The Spectator* and *The Athenæum*, *The Strand Magazine*, its rivals and imitators, are all well written; while sixpenny editions of standard novels and standard literature bring a vast amount of the best literature within the student's reach. There is unlimited abundance of good material if only the student will read; and read he must. But to read with ease and pleasure the student must have been well taught, and he must persevere by his own effort.

It is on account of this need for wide and varied reading that it is expedient to do away with the fixed text-book for the Entrance examination, quite as much as on account of the real or supposed reliance on mere memory which the prescribed text-book fosters. It is surely a lamentable thing that for two whole years or more the effort of the student should be concentrated on a hundred or two hundred pages of English. Whatever else it does, or does not do, the fixed text-book certainly tends to narrow the schoolboy's reading.

With the study of English literature in the more special sense we are not directly concerned in this paper, though there are many questions of interest to be settled in regard to it. Should college courses also confine themselves mainly to nineteenth century literature, or to the greatest masters, or should we aim at giving our English scholars a taste of many periods and styles? I content myself with suggesting that the aim at these higher stages should be rather at concentration than any desultory browsing.

As regards the highest stage of all, an M. A. degree in English at an Indian university ought certainly to represent

some measure of real English scholarship. Now it is a striking fact, and one of the severest condemnations of our whole system of English studies, that, in spite of the hundreds of scholars who have for many years been making a special study of English, there has not, as far as I am aware, and I should be very glad to be corrected, been a single contribution of any original value to English scholarship in the higher sense from any native of India. This is a very poor result for all the pains spent here on English. There is, perhaps, a greater number of professed students making a professedly higher study of English in India than in Germany or in England itself, and yet the result for English scholarship is as yet nothing. We ought to aim at creating in India a real school of English scholarship, which should count among scholars in Europe and America, a school founded upon original research; for I will not shrink from using that dangerously tempting word. Our libraries must aim at acquiring the materials for such research in English. This also must be the aim of our teaching of English at its highest university stage. It is high time that India produced her Taine or her Brandes.

THE STUDY OF MATHEMATICS.

THERE is, undeniably, presumption in attempting to deal critically with a branch of knowledge with which one has but a very limited acquaintance, and I have been greatly inclined to pass on this part of my subject to another and more competent hand. But there are aspects of every branch of study of which even the layman may judge, since they are matters of common sense and general education; and the consideration of the importance to these papers of unity of design has determined me—with however great rashness—to say what I have to say on this head and stand by the consequences.

Now that which specially strikes the educationist in India in regard to Mathematics is a fortunate attribute of this branch of studies, namely, that here at least we are, as near as may be, free from the complications and difficulties attendant upon differences of language. Mathematical abstractions know no country

or people, they are as cosmopolitan as the substance of thought itself. Here we seem to have a subject in which we are no longer hampered by the cardinal difficulty of learning in a foreign tongue. Here then, at least, we may reasonably expect a larger measure of success than in other subjects, for we have no longer to discount the hindrances due to diversity of tongues. When, however, we enquire as to the facts, the results, unfortunately, do not come up to our expectations. The study of Mathematics is not free from the deep-seated faults which vitiate so much of education in India; indeed, taken in gross, the study of Mathematics appears sometimes to present these defects in even a flagrant and exaggerated form.

Quite possibly, and indeed I know it is so, things are not so bad in other parts of India as in Bengal. As to the facts in Bengal, there is, unfortunately, no possibility of doubt. But first, in accordance with my general plan, I will indicate how I conceive the study of Mathematics may be made to conduce to what I have stated to be intellectually the grand end of higher education in India. The end was to strengthen understanding and judgment; and on the face of it no study seems better calculated than Mathematics to exercise the natural activities of mind, to strengthen and refine the reasoning powers. All that is needed is that the subject shall be well taught and the judgment really exercised in the mastery of mathematical truth, whether it be in the simple science of numbers and in elementary Algebra and Geometry, as part of a general education, or in the higher departments of the science which are only for the specially trained. In simple Arithmetic, for instance, it would seem that it was quite impossible to evade an elementary exercise of the understanding. A sum is a sum, be it only in simple addition, and the right answer will never come out hap-hazard, even if we know no better method than the primitive method of counting on the fingers. There is here a simple but well-defined exercise of faculty. Still more is this so in the case of problems of all kinds, whether concerned with papering and plastering, with apples and boys and proportionate distribution, or with matters more subtle and intricate. The new Geometry, we are assured, is a

science that awakens and quickens intelligence; it starts with the things of experience, and builds up secure knowledge of principles by adequate practice. Algebra is stimulating in another way. Here we have a refinement of abstraction beyond that of numbers—symbols of symbols—an absolutely universal language. There is surely no means of solving your xs and your xs , your a^2 and l^2 , save by sheer hard-thinking, more easy or more difficult according to each one's native mathematical faculty and trained aptitude.* This is enough for my point without seeking to penetrate into an alien region, so mysterious to the non-mathematical mind, the world of graphs and surds, of cosines and logarithms, and infinitesimal calculus. The considerations which apply to the humble lowlands of mathematics apply with even greater force to the sublime heights and to the great inane beyond. Here we may claim that we have a perfect instrument for the universal training of the mind in independent thought and rational method. Surely, no human (or dæmonic) ingenuity can defeat the educational aim here.

Then we enquire of our mathematical friends as to the efficacy of their teaching, and receive astonishing and bewildering replies—in Bengal. Instead of being the best of subjects from our present point of view, Mathematics is nearly, if not quite, the worst. Students, we are assured, pass their mathematical examinations, high and low alike, by learning words. How is this possible? The Regulations of the Calcutta University, as they still stand in the Calendar for this year 1905, supply a sufficient answer.

We look first at the Regulations for the Entrance Examination and find prescribed (page 41) Arithmetic, all the ordinary rules to Stocks; Algebra to Simple

* I do not, however, mean and ignore that it is possible to teach Mathematics unintelligently, and that such teaching has widely prevailed in England and elsewhere, and that as a consequence a great deal of externally sound mathematical work may be done mechanically without any "thinking" at all. This is undoubtedly true and covers all work which proceeds by rule of thumb without comprehension of, or even reference to, principles. What is said above should be accepted with this reservation. At the same time I think it may be claimed that *any* correct working of sums requires, in all cases, an exercise of intelligence which ranks a little above that mere word-for-word reproduction of a text-book which is possible in many subjects but ought not to be possible in Mathematics.

Equations, Least Common Multiple, Geometry "The first four books of Euclid. with easy deductions." So far so good: these requirements seem reasonable, erring rather on the side of excess than of defect: a boy must surely know a good deal of elementary mathematics to pass the test. But, warned by our mathematical friends, we turn also to "Rules for Examinations" (page 176). Here we find that two papers are set to Entrance candidates in Mathematics, each carrying 80 marks, one in *Arithmetic and Algebra together*, the other in *Euclid alone*. The percentage required for passing in Mathematics is 25 per cent. (page 177) or a total of 40 marks out of 160. We further learn (page 176) that "In the mathematical papers *not less than 60 per cent.* of the marks in Geometry . . . shall be assigned to book-work." Worked out, these data give results that are not a little curious and noteworthy. In the Calcutta Entrance Examination it is possible to pass in Mathematics by learning four books of Euclid by heart. This conclusion follows with mathematical certainty; 40 marks only are required to pass, and 48 (that is 60 per cent. of 80) may be obtained on "book-work" in Euclid alone. Result: a boy may pass in mathematics without being able to do a sum in simple addition, if only his memory be retentive enough to hold the words of all the propositions in four books of Euclid. And this is what our mathematical friends assure us is repeatedly done. Q. E. D. It is a pretty little problem in the four simple rules of Arithmetic (which our Entrance candidate need not know). It is almost incredible that it should be so; but so it is. The subtle ingenuity by which this consummation has been made possible excites our wonder, but does not compel admiration. Truly, it is high time that the besom of reform was busy with the Rules and Regulations under which examinations are held by the Calcutta University.

We go on next to the Regulations for the First Examination in Arts. Here we find a liberal provision of Mathematics—(a) all Arithmetic; (b) a good deal of Algebra (c) more Geometry; (d) Trigonometry; (e) Logarithms. All candidates are constrained to this feast, and it is a full meal for general digestion. But warned by our experience with the Entrance Examination, we turn to "Rules for Examinations," pages 177-179. Again, there

are two papers, and 60 marks are assigned to each (page 178, 3). Pass marks are 30 out of 120 or 25 per cent., and in the mathematical papers at least three-fifths of the marks (or 72 out of 120) are to be awarded to "book-work" (page 178, 4). Again, the same accommodating arrangement for passing by means of words learnt by heart. Nor is this all: if we study the papers actually set in recent years, we find about 30 marks in one paper assigned to Geometry and over 20 of these marks to pure book-work in Euclid. So that here again there is an ingenious contrivance that a candidate may, if he has the trick of it, get most of the marks required for passing all the Mathematics of the F. A. Examination by learning propositions of Euclid by heart. The paper in Conic Sections and Trigonometry (in which also three-fifths of the marks must be assigned to book-work) thus becomes, so far as any necessary knowledge of Trigonometry and Conic Sections is concerned, an elaborate farce. Many of the candidates make no pretence of attempting it.

The Rules for the B. A. similarly provide for an assignment of three-fifths of marks to book-work, that is, 120 out of 200. In order to pass the candidate needs 60, that is, half the proportion assigned to book-work. These provisions render nugatory the fair-seeming syllabus we find on pages 50 and 51 of the Regulations. It is noteworthy and somewhat consolatory to find that in the Regulations for the new B. Sc. degree introduced in 1902, half the marks for the Pass papers are reserved to "easy riders and problems" (page 184). But why have not the rules for the B. A. been changed?

I have dwelt so long on the practice of one university (in contravention of my own avowed intentions as sketched in my third paper), because it brings so forcibly into relief the mistakes we have to avoid, if we are to make Mathematics as fruitful a subject for our purposes as our end and aim demands. That other universities err less, or not at all, does not annul the profitableness of the lesson. It is as plain a warning as the drunken Helots of Spartan education.

To attain our end we must exactly reverse the Calcutta practice. We must take care that whether for the Matriculation Examination, the School Final Examination, the F. A., or the B. A., no candidate shall pass who has

not some suitable degree of mathematical *ability*. At no stage can this be impossible, or even difficult to secure. At one stage he must be *able* to add and to subtract, to multiply and to divide, at another, to solve elementary problems. At the higher stages his knowledge of the principles and practice of Algebra and Conics, of Trigonometry, and the Differential Calculus must be real, not a farce. If necessary, we will remove "Euclid" altogether from our list of subjects: indeed, we are told, and there can be no doubt rightly told, that we ought to adopt a more modern treatment of Geometry, merely to keep up with the times. But if we cannot yet teach Geometry scientifically, it would be far better to prescribe nothing but Arithmetic and a little Algebra for the Entrance Examination, and take care that boys show a fair proficiency in these elements, than to add four books of "Euclid"—and stultify the whole of our studies. For, no manner of mental good has ever resulted, or ever will result, from learning *by heart*—one proposition of Euclid, or six hundred. Practically this may have enabled candidates to pass an examination without deserving to pass; educationally its value is nothing, or worse than nothing. The reform of this subject should rest with the mathematicians, not with the non-mathematical outsider; but reform is grievously needed. We shall never in Bengal get the results we ought to get from Mathematics, so long as these crying abuses are allowed to continue. But for very shame the regulations I have characterized should be done away with at the earliest possible date.*

It will also be advisable to keep our mathematical demands in any examination, which is a part of general education, strictly moderate. The amount of Mathematics required for the Calcutta F. A. Examination is at present unreasonably—flagitiously—high, when prescribed to all candidates, whether they have a special mathematical aptitude or not. An impracticable standard demoralizes. It fosters, though it does not justify, unlawful methods. The solution which meets all requirements is the provision of alternative courses. The student who has passed

* Nothing that is said in this paper need be supposed to disregard, or disparage, the fact that many of the best students in Bengal "take" Mathematics for the higher examinations and attain a very fair degree of proficiency in the subject. What is here said bears chiefly on Mathematics as a necessary part of general education.

a moderate mathematical test at the end of his school career should be free to leave Mathematics altogether, if he has no aptitude for the subject. A more advanced special course should be open to those who for any reason wish to take it.

If properly taught, and reasonably and sincerely tested, Mathematics should be in India a specially valuable educational subject, and we may hope in course of time to produce in ampler number mathematicians to rival the achievements of the small band of Indian mathematicians who have already won the highest distinction. In view of the eminence of Indian mathematicians in past ages, this will but be vindication of ancient hereditary right. The hopes in this field are most promising, if we do not deliberately ruin them by our own perversity.

CHARACTER.

THE NECESSITY OF TRAINING.

WHAT indeed led some educators in past ages to decide in favour of the training of character was its sheer necessity. As to its possibility, they were firm believers in the axiom, "what must be done can be done." At all events, the necessity of such training is now-a-days admitted on all hands, and that as a matter of theory, of official decision, and of practical importance.

The theory by which modern educationists have scored a signal success is to develop rather than to instruct. If the family is the recognized basis of society, the school certainly shares in the prerogative. Hence, the teacher is to prepare his pupil for after-life. A mere stock of knowledge is not sufficient. Knowledge which was once largely the aim is now looked upon as a factor subservient to that aim.

It is apparent that the whole man should be developed rather than one or the other of his faculties. Or, if an all-round development be not feasible let the influence of teaching extend harmoniously to such faculties as will have to bear the brunt of life.

Now character, I take it, is—if not a full representative of the whole man—at least that agency in him which, by its goodness, or badness, or absence, is sure to determin

his course for good or bad. Its goodness marks the promoters of the common welfare in every public-spirited undertaking: it is the stuff which heroes are made of. Its badness makes men of eminent gifts a bane to society. Its entire absence marks off that third milk-and-water class of men without backbone, without any character whatever, who do not seem to know what life is for, and prove at best harmless and useless to society.

Accordingly this necessity has been fully appreciated and enforced by the various educational bodies. To quote the words of a high Indian educational authority: ". . . education in the true sense means something more than the acquisition of so much positive knowledge, something higher than the mere passing of examinations It aims at the progressive and orderly development of all the faculties of the mind, it should form character and teach right conduct, it is, in fact, a preparation for the business of life."* Similar resolutions are issued from time to time by the local school boards. Most European countries have now introduced the national compulsory system of education—not without a view to this all-important point. I may quote Professor Calderwood's words on education in Scotland, as they have a general bearing on the case in point: "The State (*viz.*, Scotland) has charged itself with enforcing the primary education of all the children in the land. This it has done, expressly with the view of meeting an admitted difficulty of vast magnitude, perplexing to statesmen, philanthropists, and all students of the social problems of our age. Compulsory primary education is avowedly adopted as the best instrument for attempting to cope with the alarming increase of dissoluteness and vice The success of school training is to be tested by the moral condition of the nation in after years. The nation desires not merely that the memory of the children be well stored, but that the intellect be developed, and habits formed which may remain as capital to draw from when the work of life must be done. The great difficulty of our modern civilization, bred of our keen competitions, clash of interests, crowding together of multitudes of people, and consequent craving for excitement, is a waning of morality."†

* In the Resolution issued by the Governor-General in Council, 1904, p. 50.

† "On Teaching: its Ends and Means," p. 5 ff.

Finally, this crying necessity of circumstances is, in itself, calculated to impress us more than theoretical considerations, and even the insistence of competent authorities. The olden times of exclusive home-education are well nigh gone, and the so-called "golden" times of official State education after the fashion of the Spartans are mere historical remembrances. Our age needs a different system of education. The care of the boy's character is only for a few years in the hands of the family. Then there follows a long period of development under the paramount influence of the school and the world outside. Only in a few exceptional cases home may preserve a predominant interest and attachment for the growing young man. In most cases his mind is turned to the dominating ideas and ideals which world and school combine to put before him. This all is so much more true of boarding schools and hostels. The parents have left their children to the teacher's care during precisely the most important period of development. "If the pupils of any school are rude, reckless and riotous, the school management bears some considerable amount of blame. The common verdict in such a case is quite decided. Public opinion expects more than knowledge as the result of school attendance. The more this matter is considered the more obvious it will become that the expectation is just. I do not say that the teacher is always fairly judged in this relation, nor do I say that the expectations of the parents are always reasonable . . . the school must somehow or other protect itself from the evil consequences which flow in upon it because of a breakdown in home-rule. In such cases, however, a burden is thrown upon the teacher which he should not in fairness have had to bear. Accepting, however, his responsibilities . . . the teacher undertakes to exercise supervision over the deportment and conduct for the pupils." ‡

THE USEFULNESS OF NATURAL SCIENCE.

THE whole question of the extent to which what is so unsatisfactorily called "the teaching of science" should form part of general education is so unsettled, especially in England, that we can

‡ Calderwood, l. c., p. 4.

hardly expect to reach perfectly settled conclusions about it in India. The old quarrel between the Humanists and the Realists is still imperfectly reconciled and has lately been passing through some acute phases at the older British Universities. Oxford clings to "compulsory" Greek. On the other hand, Professor Ray Lankester would adjust the true balance of education, by giving a decided predominance to the study of Nature. He would not abolish the "humanities," but he would teach them their place, which is subordinate to the study of realities.

But this is not the only difficulty, nor, perhaps, the chief, when in the interests of impartial educational theory we seek to determine the true place in education of the study of Nature. The advocates of "science" are at variance also among themselves. They are not unanimous on the all-important question of the method of science-teaching. Is the Heuristic method the right one or the expository: the inductive or the deductive? Should the method of science-teaching, even when the science is quite elementary, be the method of discovery; should every schoolboy learning science be in some small way an original investigator, as some tell us? Or is this practically unworkable, and must the earlier teaching of science, as in other subjects, be mainly or largely the authoritative setting forth of results? I find, on the one hand, Dr. F. H. Hayward quoting Professor Armstrong in the *Journal of Education* for May as contending that the whole endeavour should be "to inculcate the habits of observing accurately, of experimenting exactly, of observing and experimenting with a defined and logical purpose, and of logical reasoning from observation and the result of experimental Science. Scientific habits and methods must be universally taught." On the other hand, Mr. H. G. Wells warns "in the hands of the average teacher by whom it must be done for the next few years the heuristic method will result in nothing but a pointless fumble."

investigation of Nature—not even in the case of birds and beasts and flowers; where teachers of science are few and untrained and mainly text-book-bred; where money is lacking for the equipment of laboratories; and where the whole environment, except for a small privileged circle, is unfavourable; and only the educational enthusiast and the instructed theorist who wishes his views to be up-to-date cries out for universal science-teaching. It is comparatively easy, it is true, for Government or for the Universities, to decree in a few lines of writing that the teaching of science shall be introduced into every school and college in India, but to achieve widely a real instruction in the ways of Nature, and kindle in the minds of the young some tiny spark of the scientific spirit,—that is a very different, and a much more difficult undertaking.

Yet, plainly in the light of our guiding principle in these papers, this is precisely what we would do, if we could. Independence of judgment, intellectual freedom, the power of thinking justly, and determining action rightly in all the novel combinations of circumstances which life brings, this undoubtedly is the end. And equally undoubtedly there are no studies more certain to develop these characteristics and powers than first-hand investigation of Nature; Nature being understood to be birds and flowers, stones and earth and trees, the elements of things and the forces that regulate the changes of phenomena around us—and *not* to exclude man and his works. This first-hand investigation of things themselves in the widest sense, this training in the careful use of the senses and the natural reasoning powers, in observation and induction is *science and the scientific method*. There cannot be two opinions up to this point; our aim must be to introduce as much of such science into education as possible; the only limit to our endeavours should be the limit of our power.

But it must at once be observed that science in this wide and only true sense, is far wider than what is ordinarily understood by physical or natural science as a branch of study in the school or college curriculum. It includes Physics and Chemistry, Botany and Biology, Astronomy and Meteorology. But Physics, Chemistry, Botany, Physiology and the rest of the positive sciences do not

exhaust Science. Geography, History, Logic, Ethics, Literature and Language are also sciences, and may be scientifically taught. The scientific spirit may be introduced into them and caught in turn from them: first-hand investigation and the exercise of inductive principles of reasoning may be found in all. In fact, the supreme service rendered to the human mind by the free investigation of Nature is precisely the production and communication of this scientific spirit. History, Psychology, Literature are now studied and investigated in the scientific spirit and may, therefore, be used in education to inculcate the scientific habit of mind. The humanist may make that acknowledgment to the realist with utmost gratitude. But, on the other hand, the realist must recognize that the teacher of the humanities has become his pupil, that the elements of humanism are real also; and he should even concede the possibility that under particular conditions the study of the humanities might conceivably be the best form of education in reality. For, after all, History, Psychology and Literature deal with objects of real experience; language is for man one of the prime realities. The true contrast is not between Science and Classics, the sciences and the humanities, but *between scientific and unscientific method*.

This also must be definitely recognized, and the more vividly the better. *Science teaching may itself be unscientific*. It is possible to "learn" several sciences, even in appropriate circumstances to pass examinations and attain degrees in them, and yet be as far as ever from reality, as far as ever from any true understanding of Nature and her manner of working. The best advocates of "science" recognize this. "Ten or twelve years ago," says Mr. Westaway in the second of two deeply interesting articles in *The Journal of Education*, "there was at least one English University which conferred a science degree upon men who had not, necessarily, done experimental work of any kind, who need not have seen the inside of a laboratory. Even in the case of those subjects of science where practical work was required, the necessary laboratory course could be covered in a few weeks. Yet, curiously enough, a high standard was exacted in 'theoretical' knowledge, with the consequence that many of the candidates seeking the degree spent two or three years in extracting what they called science from 'books.'" And

Professor Sadler writes in *Indian Education* for August, "Physics and Chemistry can be taught as lifelessly as second-rate Latin prose. You can find as much routine and conventionality in school laboratories as in classical form-rooms." Substitute "Indian" for English in the first of the two quotations above, and "now" for ten or twelve years ago, and we have a fairly apt description of the condition of things with which we actually have to deal.

I do not pretend to be able to set forth all the conditions of good science-teaching, as opposed to these mistakes. It must, like good teaching in other subjects, be "real," and be alive ; it must do what it professes to do, lead the taught to the first-hand study of Nature and to the drawing from her of her laws by patient observation and sagacious inference. But the point to be grasped and placed in strong relief is, that it is the good Science teaching, not the bad, which we want and must have.

But how? We have just acknowledged how wide is the true application of 'Science.' Even Natural Science covers a very wide range of subjects. It has certainly been too much our habit to identify 'Science' with Physics and Chemistry. But it has long been recognized, though not to much practical effect in India, that elementary 'Science' need by no means be confined to the elements of Physics and Chemistry. Botany has been put forward, and is now being put forward again, as by far the most convenient study, through which some insight into the scientific investigation of nature may be gained. There is much to be said for the practical learning of Physiology and again for Sanitary Science.

The claim of Physics and Chemistry to form part of general education rests on the early place these two occupy in the order of the Sciences. Physics and Chemistry are in a sense the foundation of the Sciences dealing with life. In the order of the Sciences, Physics follows on Mathematics and Mechanics : then comes Chemistry. Physiology is based in some respects on Chemistry. Botany and Zoology involve Physiology. Presumably, this is why Physics and Chemistry have usually been taught, as 'Science' in schools, and have been so generally adopted that to many Elementary Science means a smattering of Chemistry and Physics. But the objections to Physics and Chemistry are serious. Much expensive apparatus is

necessary, if they are to be taught satisfactorily. Moreover, the conceptions required in each of these sciences are difficult for boys.

Physiology is of the greatest practical importance, when we desire to spread Physical education and a knowledge of the conditions of health. *Elementary* Physiology may, perhaps, be usefully taught without any elaborate and costly apparatus. There is much to be said for teaching a little Physiology in schools. The advantages of Botany are even greater. It is a subject of immediate interest to all and specially so in India. Trees, and shrubs, and flowers, cereals and vegetables are objects which enter into our every-day life, and all of us would be the better for scientific knowledge about them. There is here no need of elaborate apparatus. Garden flowers, grasses, rice and wheat, potatoes and tomatoes, are readily obtainable, a trowel, a penknife, a pair of eyes, and, perhaps, a 'press' are all the implements necessary. The only difficulty with Botany, though it may prove a serious one, is to find teachers with the required habits of careful observation and with the love of the subject without which no teaching is of much avail. Sir George Campbell made an attempt to popularize the teaching of Botany in Bengal full thirty years ago, but the effort died away. Much might be hoped from a really thorough-going attempt to reintroduce it now.

But it is not to be forgotten here that Geography is a science and a practical science, and a study of reality. Has it not been sufficiently demonstrated that Geography begins with a careful exploration of the schoolhouse and playground, of puddles and gutters and local stream-lets, and thence extending to the village and country-side extends to the comprehension of the whole round world? Here are objects close at hand, related to practical life, here is observation, induction, generalization. It cannot be questioned that there may be 'science' teaching in Geography, as well as in Botany or Physics.

Nor is the claim of History to the name of science one to be scouted. True, it is descriptive rather than inductive taken in its whole extent, yet it none the less involves on occasion the use of observation, induction as genuine and as profitable as in Physics or Botany. This is the case whenever first hand evidence is to be weighed and conclusions drawn from conflicting testimony. The documents

of history are real and demand a high power of reasoning at first hand to weigh them properly. The trained student of history ought to be as fitted to grapple with the ever-fresh problems of practical life in the tangle of affairs as any trained chemist or botanist. So far History may be shown to deal with realities. But it may be objected that History is a mere narrative of past events, and that the events of five hundred or a thousand years ago are for the child and for the ordinary learner out of any recognizable relation to the present, and therefore not real in the sense required. To this it must be answered that History so taught is wrongly taught, and that as Geography has been badly taught for centuries, so has History. The improvement of the teaching of Geography has come first but the improvement of the teaching of History must follow. History by the scientific method proceeds from the known to the unknown, the near to the remote, the present to the past. It starts always from the present moment *now* and proceeds by a progressive elaboration of the links of connection to show how the now has been conditioned by preceding nows, the successive moments of History. A child may not understand this fully; but even a child may be made to understand that the past events only get their meaning from their relation to his now. Conversely, the present only gets its full meaning from its relation to the whole traceable past. The higher you go in the scale of intelligence, the more necessary becomes the scientific apprehension of History. Surely, with a more accurate and vivid knowledge of History and a more trained historic sense newspapers would exercise a saner influence, and administrators be saved from deplorable mistakes. But these things are exceedingly real and practical, few studies more conduce to the production of right-thinking men and good citizens than a truly scientific study of History.

It would carry one too far and take too long to show that something like this is also true of philosophy, literature, and languages. In so far as these studies have intimate relation to life and admit of scientific treatment, they must be included in science in the present sense. The point is proved, if it be admitted, as, I think, it must be admitted, that such ideas as personalities, freedom, aristocracy, the rights of man, art, beauty, self-sacrifice, heroism, duty have the closest possible relation to practical life and help to determine human action. It is in literature

and philosophy that we have access to such ideas as these ; and if these ideas bear practically on life, philosophy and literature are sciences.

The condition of the scientific claim is that the study should be genuine and first-hand, the investigation real.

If all this be admitted, the question of science teaching appears to have shifted its exact scope. The fundamental contrast is found to be the opposition of good and bad teaching. Each one of these subjects can be taught well or badly. Taught well, it becomes scientific, a science. Taught badly, it is unscientific, no science at all.

The only question beyond is one of curricula, the selection of the subjects best suited to attain the educational end in a particular case or cases. All subjects are found to be useful for that particular training implied in the term, 'scientific' method. But since all cannot usually be taught together, the point to be determined is which subjects are the most expedient or convenient in any given case.

Bad teaching it must be recognized is possible in any subject : and bad teaching is as fatal in one subject as another. It is not so much the subject as the teaching which makes the difference between good education and bad. It is no use choosing the best subject, unless also it is going to be well taught. If there is bad teaching of literature and history, there is also bad teaching of science. The most indispensable change is a change in the character of the teaching, not in the subjects taught. But because of the peculiarly high claims now made for 'science' so called in the limited sense, it is important to see that the inefficient teaching of science is for the moment worse than any other form of bad teaching. It does signal harm in two ways. The results of bad science teaching must be contemptible. So bad teachings bring discredit on science and the whole position of the realists. And bad teaching in science obscures the true reason which makes science teaching, or rather the first-hand study of nature, valuable. The provision of the bad actually makes the good more unattainable.

We are now nearly in a position to draw some really practical conclusions on this momentous question, that is, conclusions applicable to schools and colleges in India now.

We only require to glance once more at the general conditions of good science-teaching and then to make such applications as are possible. These conditions are mainly two :

1. There must be good teachers, thoroughly imbued with the scientific spirit, and versed in the methods of dealing with nature at first-hand. This will make the teachers sound in their science. They must also have been trained in the principles of teaching and the art of teaching science. This will make them good teachers. I must again quote from *The Journal of Education* to show what we have to avoid—but alas ! what too often as yet we have, “they stand in front of a class and lecture,” like so many of their classical colleagues, they do not teach—they talk. The work their pupils do in the laboratory, often a mere verification of facts already told, has only the slightest educational value. They do not appear to realize that the “theories” and “hypotheses” about which they are so anxious act as mere “cradle songs to lull their scholars to sleep. It is useless to scoff at, preach to, or pray for many of these men of the old school. They cannot, or will not, see that scientific facts, as facts, are of little more value to the ordinary boy than the names of the tributaries of the Ganges or of the battles of the Civil War.” With this is contrasted the true work of the scientific teacher of science. “The science teacher who has taught his pupils to be active enquirers, to exclude all doubt from the facts before them, to reason from those facts and from those alone, to search for truth at all costs, has played no mean part as an educator.”

2. There must be adequate equipment. In the case of Physics, Chemistry, and Physiology this means laboratories fully equipped with all proper appliances for actual experiment and investigation up to, and somewhat beyond, the stage to which the actual teaching is to be carried. In that of Botany it will mean access to fields and woods and gardens and collections of specimens.

The conclusions which I think may be drawn are these. In the larger sense teaching in all subjects may be scientific and, when this is so, the subject, whatever it be, is raised to the rank of science. But in the narrower sense which is the proper subject of this paper it may be laid down.

1. It is desirable to introduce the study of nature as part of general education in India, wherever possible and in whatever form can most easily be made practicable. There should everywhere, even in Primary schools, be a little elementary science. But this can probably be most suitably attained through the better teaching of Geography.

2. The teaching of natural science should be promoted in Secondary schools in as complete a form as possible. But two conditions must be carefully observed—

(a) There must be properly trained teachers.

(b) There must be proper equipment.

Without adequate equipment and trained teachers it is wiser to be content with such instruction and scientific ideas as can be conveyed by popular lectures. For any professed teaching of natural science we do better to wait for the teachers and for the money. It is necessary to train teachers, and this training of teachers should come first.

3. When a college undertakes more advanced science teaching, care must be taken to secure that the teachers shall be real 'men of science,' that is, active and persevering enquirers and searchers into nature: also that the laboratories are fully equipped for practical work and kept in order. Without this it is better to confine the teaching to literature, history, and philosophy, and to take care that these subjects are suitably provided with the less costly equipment which they require. It is, however, to be remembered that it is at the colleges that the teachers for Secondary schools must be trained.

4. Lastly, in the leading colleges, more particularly in those few which are to be understood as representing the highest aspiration of the Universities, we may not be content until the opportunities for true research can be compared without apology with the equipment of German, American, and Japanese Universities. What the Universities, each in its corporate capacity, can do to forward these ends, it behoves them to take thought without delay.

In sum, it comes to this. We need to encourage active research into nature and the diffusion of scientific conceptions and scientific habits of thought through general education to the utmost limit of our resources for good

teaching. But we must not ignore the stern condition that, in order that either of these may avail, the teaching must be good and the equipment adequate. We do better not to teach natural science at all than to teach it badly : but provided we teach it well, we cannot teach it too much. Once more here also all depends on quality.

THE PLACE OF ORIENTAL LANGUAGES.

THERE is no question which will so searchingly test the principles with which we set out as this of oriental languages. It is such an obvious platitude that in an oriental land the oriental classics ought to be honoured and cultivated and that higher education ought to be based upon them. Our sense of justice arrays itself on the same side and conscience plays the traitor. But if we are really bent, as I have tried to be, on determining what are the most favourable means for attaining certain high ends with which we set out, then sentiment and platitudes must be put aside and we must start with open minds, and the sole question for consideration here becomes, this — Given the end to be, as was assumed, the communication of intellectual freedom and moral strength, how far will the study of oriental languages conduce to that end, and if it can be made so to conduce, is it to be regarded as a necessary or merely as a possible part of higher education ?

There are really two questions involved ; for oriental languages may be either classical languages, Sanskrit, Arabic, and Persian : or vernacular languages whose number is legion, Urdu, Bengali, Marathi, Tamil, Telugu, being among the chief.

The extent of the question is so great and the argument so thorny and difficult that I shall, as the most expeditious method, begin by stating the convictions to which I have been brought by observation and reflection, and go on after to urge such considerations as seem to justify the conclusions I have come to, leaving it to others to demolish my argument, if necessary. And I must disclaim the right to speak with any authority higher than that of general reasonableness. I have no special knowledge of any one oriental language, and what I may say must be

so far discounted, though I do not think that my conclusions are thereby wholly invalidated. This part of the subject is again forced on me by the obligations of the whole undertaking: I would avoid it if I could. But as it is impossible to treat of the whole education and pass by oriental languages without notice, I can only put forward what I think—not altogether rashly and hazardingly—and leave the result.

My conclusions are these :—

1. The study of Sanskrit, Arabic and Persian by sound critical methods is an extremely valuable but *not indispensable* part of a liberal education in India.

2. The study of the mother tongue is an indispensable part of education in schools, but it is not very suitable as forming part of university courses. Therefore

3. The vernaculars should not be allowed as an alternative, still less imposed as a necessary, subject at the University Matriculation Examination, though they should be necessarily required at the Schools Final Examination, in such languages as possess a literature.

4. The vernaculars should not be allowed at all as part of the course for the ordinary degree at any stage. But where there is a literature of high character, as in the case of Urdu, Hindi and Bengali, they might be taken as a special Honour subject (*in addition to* ordinary Pass subjects) and a really complete and critical knowledge of such a language should confer an M.A. degree.

5. The classical languages, Sanskrit, Arabic and Persian should be *alternative* subjects for the University Matriculation Examination (*any one*) and again for the Intermediate Examination (if there is one). They should also be an alternative subject for the B.A. degree.

6. The higher studies of these languages should be carefully cultivated and encouraged as Honour subjects for the B.A. and as M.A. subjects, care being taken that the study is really scholarly and critical.

The reasons determining all these conclusions are nearly the same and may be simply stated. The conclusions all flow, seem to me to flow, from the principles with which the articles start. The aim is to educate in a particular ; and thereby reach definite intellectual and moral . Its. We want to quicken the judgment

and endue life with high purpose. The question then is to what extent, and in what way, will the study of oriental languages conduce to these results. And further, how are these subjects compatible with others, having regard to the unavoidable limitations. A subject may have high claims in itself ; but there may not be room for it. High claims must give place to higher. When we cannot teach all subjects, we must include the most indispensable.

The first question to be determined is reduced to this ; is the study of the classical languages a *necessary* part of liberal education in India ? For it must not be supposed in question but that Sanskrit and Arabic and Persian have very high claims. Sanskrit is doubtless the basis of Marathi, Bengali and kindred languages ; and there are many Arabic and Persian words in Urdu. Are Arabic and Persian in the one case, and Sanskrit in the other other, *necessary* ? I answer no, unless Anglo-Saxon and Norman-French are necessary parts of a liberal education in England. The analogy of Latin and Greek is obviously also in point, though with somewhat less force. But in England the last strongholds of the extreme defenders of Greek are being battered, and it is fairly clear to all but the fanatical defenders of the ancient *régime* that the last defences must before long give way, and the real usefulness of Greek and Latin as educational subjects be not a whit lessened. Latin and Greek will be recognized always as educational subjects of a value unsurpassable in the whole range of subjects, and indispensable for the highest study of English language and literature ; but *not* as forming the indispensable basis of the one sole form of liberal education. The tyranny of the Latin and Greek grammars is practically over ; they cannot much longer be insisted upon merely as intellectual drill. You can get the drill as effectually and something else valuable at the same time in other ways. These considerations alone seem to me to carry with them the conclusion that it is not advisable to make the classical languages in India *compulsory*. Compulsion is indeed a word which should be unknown in education, so far as the compulsion depends on arbitrary prescription, not the nature of the case. When we consider the unique character of the experiment being tried in Indian universities, the greater indispensableness of other subjects,

and above all of English as the actual medium of instruction, the case is greatly strengthened. The study of Sanskrit, Arabic and Persian is to be encouraged, but not compelled.

2. As regards the mother-tongue the considerations are not very dissimilar. The mother-tongue is the first and most natural vehicle of thought. Training in the mother-tongue is one of the best and readiest of intellectual disciplines. Therefore, when the language has a literature, when it is anything more than a barbaric speech, it should be carefully taught at schools.

3. But when we go on to consider its relation to university education, we are forced to recognize that the case in India is peculiar. We are unable as yet to educate beyond a certain stage in the vernacular ; English has to take its place. Then to all intents and purposes *English is the vernacular of University education*. It may be unfortunate that this is so ; but the actual facts have to be faced and just now it is of little use to regret them. The indispensable importance of English for our special purpose and in our special circumstances excludes the vernaculars. Frankly, for the express purposes of university education, we must perforce neglect the vernaculars. This is forced upon us by the necessity of economizing subjects. We have not room for all. The vernaculars drop out of the Matriculation and the Pass Examinations, because they are less necessary than other subjects.

4. But we need not sacrifice them altogether. If they have any vitality, they will retain such a hold on the students who naturally speak them that at any stage they can in fitting circumstances go on to the higher study of them and carry them to any point. This is curiously very much what has been the case till recently, and even is to some extent now, with education in the British Isles. Englishmen made little formal study of English even in their schools, but the more intelligent of them read English literature, and with special training at a higher stage became in the full sense English scholars. On this analogy I believe it would still be possible to make good use of the vernacular language as subjects for Hon. examinations. But it is an indispensable condition of this conclusion that these languages should be critically taught and strictly tested. A low

standard of attainment for Honours in these languages would by no means satisfy this condition.

5. Considering again the case of the classical languages, we find that, being highly cultivated as to form, and possessing literature of great richness and variety, they make very useful subjects whereby to train and test the powers of mind we seek to produce. This is decisive as to their intellectual value. As regards their moral value, as a training in character, it is unlikely that oriental scholars would admit that Sanskrit, Arabic and Persian literatures have a lower range of moral interest than Mathematics or Logic, or History, or the Natural Sciences, which are the alternatives with which they must be brought into competition. And the claim would be that they possess this value as subjects for any one who likes to choose them.

6. As Honour subjects the case for the classical languages is much stronger. A thorough scholarly knowledge of these literatures, such as an Honour course demands, must have greater potency both intellectually and morally than the less degree of mastery which a Pass subject demands.

But here the question of the method of teaching oriental languages, whether classical or vernacular forces itself upon us with a special urgency. What has been contended for above is only valid on the supposition that the oriental languages shall be taught with the same thoroughness and by the same scientific methods as other subjects to which they are alternative, and in particular as other languages. And here we are certainly confronted with a problem of great difficulty, for it seems doubtful whether the method on which these languages are generally taught is as scientific and scholarly as could be wished. Scientific and scholarly must be interpreted with exactly the same significance and strictness, as in the case of Greek or Latin, or of History and Philosophy. Leaving aside the more difficult case of the vernaculars, is the method of the teachers of Sanskrit, Arabic and Persian based on the best known principles?

The teaching of Sanskrit has particularly been called in question. An ably written pamphlet by Professor Lalit Kumar Banerjee of the Bangabasi College, Calcutta, under the title "Sanskrit in our Schools," brings out very clearly that there are serious defects in the present

system of teaching Sanskrit in Bengal. And as the faults of the system described are traceable to the ancient indigenous methods practised in the *toils*, it seems probable that they extend also to other parts of India. Criticism of what is actually being done, as I have more than once explained, is only secondarily and indirectly the aim of these papers. To enter into the question of the actual teaching of Sanskrit is therefore outside the scope of the present discussion, even were I more competent to the task. But Professor Banerjee's conclusions as to the right method of teaching are apposite to my purpose and in close agreement with the point of view here adopted. His general position is that in teaching Sanskrit "we should assimilate the latest improvements that obtain in Europe in the matter of teaching a classical (or foreign) language." He desires for this purpose "a set of scholars that have succeeded in reconciling the solid learning of the East with the improved methods of the West." The reforms he advocates require a thorough remodelling of the existing system of Sanskrit teaching in "the lower classes." It all amounts to a plea that intelligent methods should take the place of unintelligent, rational that of mechanical. It seems that the practice prevails of requiring in examinations, even at so early a stage as Matriculation, the explanation of the text *in Sanskrit*. This leads to a system of mechanical paraphrase without any true understanding of the sense of what is paraphrased. Needless to say, Professor Banerjee condemns the practice as "irrational and positively mischievous," and advocates in its place explanation of the Sanskrit text either in the mother-tongue or in English. He points out that two modern principles of teaching have already been adopted in the teaching of Sanskrit in Bengal, namely, the teaching of grammar through the medium of the mother-tongue, and limiting the amount of grammar taught to beginners. He asks for the recognition of three further principles:—1. The use in class-teaching of constant reference to the mother-tongue in order to bring out points of resemblance and difference. 2. Use of the natural method "of beginning with simple reading lessons and leaving the young learner to discover the rules of grammar from them." 3. "Lessons in translation should proceed side by side with lessons in grammar, because concrete illustrations and

practical applications of the abstract rules can alone fix them permanently on the memory."

All this is so eminently reasonable that it must at once compel assent from any one whose only interest is the promotion of sound learning. That it needs to be said at all shows how far the conditions of sound learning are from being realized in respect of the study of Sanskrit in some parts of India. The almost incredible stories told in Bengal of the utter ignorance of Sanskrit on the part of candidates who pass examinations in Sanskrit are eloquent confirmation of the urgent need of radical reform at all events in Bengal, even if it may be hoped that better methods are sometimes followed. This at all events is certain, unless the Sanskrit language is up to a certain stage really understood and *known*, Sanskrit can have no value whatever as an educational subject. It is, therefore, incumbent on every advocate of Sanskrit as an element in liberal education to aim at securing that Sanskrit shall be taught efficiently on rational principles. The test of "a safe grounding in Sanskrit" can at all events be secured, as Professor Banerjee is at pains to show, by the simple expedient of introducing into the Matriculation Examination "easy unseen passages for translation." The whole pamphlet deserves to be attentively studied by any one who believes in the educational value of Sanskrit and desires to promote sound scholarship.

As far as right methods are concerned, the same arguments must be applied to Persian and Arabic, and, indeed, to every language taught and studied. If our educational results are to be sound, our methods must be intelligent and rational. The poverty of actual results in respect of real scholarship and research in oriental languages is ground for suspicion that as yet methods in other languages besides Sanskrit are not as sound as they need to be. The fruits of a really sound scholarship in Persian, Arabic and Sanskrit would be so priceless in value that we may well look to the universities to do all they can to place the study of these languages on a sound basis. For original work of all kinds, philological, literary, historical, these languages offer a field immense in range and of unparalleled richness and promise. In this field Indian scholars work with advantages which are denied to the scholars of Europe by the circumstance of the case. Yet up to the present time-

the really scientific study of the languages and literatures of the East has been mainly the work of European scholars. The ultimate aim of the study of oriental languages in Indian universities should certainly be to produce scholars whose work should equal and even surpass the work of European scholars. The revival of learning in India has failed of its purpose till this result has been brought about.

Another highly useful task for the scholars trained in Indian universities is to popularize the knowledge of oriental literature and languages and so mediate between the East and the West. The "general reader" in Europe and India needs to know more of the relation of Persian to Greek and Latin, of the contents of the vast treasures of Sanskrit literature, of the unrealized wealth of Arabic. There are numerous historical and philological questions of general interest which can only be unfolded by the oriental scholar. Here, too, there is an almost unlimited field for the new school of oriental scholars which the Indian universities should foster and rear. In case of the vernaculars also there is ample scope for work of much the same character. Besides its importance for scholarship, such work has the further value that it helps to bridge that gulf between eastern and western thought, which has been declared to be fathomless, but which I believe to be largely illusory.

It should now appear sufficiently that any limitation of the attention to and study of oriental languages recommended in this paper is not put forward in a spirit of unfriendly opposition or depreciation. Some of the propositions laid down at the beginning may appear paradoxical in respect of the high claims made in the end for oriental studies. But the paradox will be lessened or removed, if it be observed that what is advocated in all cases is thorough and scholarly study, and that the limitations recommended are imposed in the interests of sound scholarship and out of regard to the difficulty of providing for all the claims of the new learning. The claims of oriental languages rank very high, but the intelligence and strength of judgment, which are the reasons for which the new learning as a new and special effort exists, must come even before these. We shall teach the oriental languages so far as we can teach them thoroughly and effectually in furtherance

of the ends set before us; we shall not teach them merely to satisfy the demands of prejudice and tradition.

Very much is left unsaid. No development has been attempted of the æsthetic and linguistic, the literary and philosophical sides of the classical oriental languages; hardly anything of the methods of their study in detail. The most interesting aspects of the vernaculars have not been touched at all. For the expansion of the vernacular literatures and the gradual perfecting of vernacular languages as instruments of expression are matters of the highest interest, and of the most serious importance—especially to those vast numbers whom “English” education does not yet reach. But the beauty and fitness of these languages severally and the methods by which they may be most effectually and profitably studied—and, in the case of living languages, advance—must be left to professed scholars, Indian and European. The only pretension of this paper is to have rightly laid down the broad principles on which oriental languages, whether classical or vernacular, are, severally, at the present time to be included in University courses in India as integral parts of, or as accessories to, liberal education.

Further, these principles are intended to be applied with the utmost rigour. If means can be found to have oriental languages taught in such a way as to rouse the intelligence and stir the mind to active and fruitful working, we shall find as large a place as we can for them. But if they cannot be so taught—as far at least as the scheme here contemplated is concerned—they have no place at all. By so concluding we best consult the interests alike of oriental scholarship and of the students of the new learning. A lifeless study of language, oriental or occidental, has no educational value at all. Either then we must endue such studies with life, or shut them out altogether from a scheme, the express aim of which is to give freedom to the mind and strengthen its power of judgment.

THE PUZZLE OF EXAMINATIONS.

MOST of us who are engaged in education have at some time or other felt stirrings of rebellion, faint or vehement according to temperament and circumstances, against the grievous yoke of examinations

In India the problem has certain specially acute features, but it is by no means in India alone that the perplexity of the problem has been felt.

Some twenty years ago a vigorous assault on the whole system was made in the pages of *The Nineteenth Century* and about a hundred names of weight and authority were recorded in protest against it. Now, again, in the newly-started *University Review* champions appear, one after another, to run a tilt against examinations and the established method of conducting them.

The cry is that examinations are too many, and too rigid in their method; and, what is far more serious, that they misguide education; that they concentrate attention on the wrong thing, because they apply the wrong test; that they dissipate effort on trivial objects, and consequently divert education from its true end—study, knowledge, wisdom, and the quiet strengthening of the intellectual powers.

The hardier among us here in India have, perhaps, ventured to speculate on a possible reduction of the burden under which we and so many hapless thousands groan; but do we also realize that there are parts of the world where the impossible has become possible and examinations, as we know them, have either been done away with altogether or so judiciously tempered and limited that they do good without doing harm? It is fairly well-known that in Germany the higher degrees are conferred not by examinations but by the presentation of theses. But it is to America, the adopted home of freedom, that we must look to see what further emancipation is possible and how it is to be effected. To many the accounts of the American system to be found in the reports of the Mosely Commission must come as a revelation, and bring with them something of the beatific vision. There are examinations in the universities of the United States, but the tyranny of the examination system is broken. "In America," writes Prof. Ayrton, "much less importance is attached to examinations than in Great Britain. Whether a student is worthy of a degree is left to the decision of his professors, without the intervention of outside examiners." (Mosely Reports, p. 35.)

"The external examiner and the external examination system is practically unknown in the United States. The

teachers are free, and being free they are enabled to give their courses a breadth and depth that would be impossible were they hampered by the knowledge that their students were to be tested by examiners who knew little or nothing of them." This is said by Prof. Gregory Foster, of University College, London; and he goes on: "The tests and examinations for undergraduate students leading to the Bachelors' degrees are conducted almost entirely by the individual teachers, and with the most satisfactory results. In the universities of the States there seemed to be an atmosphere of quiet study and scholarly work which is apparently continuous throughout the session, and remains undisturbed by feverish bursts of cramming such as characterise British colleges and universities."* Surely we are dreaming, or this is some university in Utopia!

Not less significant are the conclusions to be drawn from the protestants of the new *University Review*. In the first number (May of this year) Prof. Arthur Schuster, of Owen's College, Manchester, carries a mine under the very foundations on which the prevalent system rests, when he objects that it aims only at testing knowledge, not the power of applying knowledge in new ways; that it therefore hinders the production of those highest capacities which it should be the object of university training to develop, by actually holding back the students from free and disinterested investigation. "The evil of the examination system," he writes, "does not lie so much in the cramming to which the weak student has to submit himself, in order to pass, as in the lasting damage it does by wasting the time of the strong student, to whom at present the attainment of a high position in the final tests is often of vital importance." It is in one word "originality" which is the quality of most value in real life and to the race; and while originality can to a certain extent be acquired by training, it cannot be tested by examinations. "The power of utilizing the experience gained perhaps by centuries of work, and to fertilize it with that little spark of originality which shall convert a mere repetition of what others have done into proper productive and useful work in all subjects." "What I mean by training in research work is the development of that critical power and faculty of independent thought which ought to

* Reports of the Mosely Educational Commission, pp. 115, 116.

lead to real success in life, whatever the vocation may be." "But it is not possible or desirable to apply an examination test which shall distinguish between students who have learned the art of originality, and those who have not. The essence of research work is the concentration of the mind on one problem to the exclusion of all others. The essence of examination work is the dispersion of the mind over many problems to the exclusion of the one a person is specially interested in." He sums up the distinction between what can and what cannot be tested by examinations in the formula—"The power of applying knowledge cannot be tested satisfactorily by examination."

Prof Hartog in the July *Review* qualifies this statement in so far as he holds that in a limited degree the test by examination of the application of knowledge is possible—in mathematical work, in analysis of the written page or the chemical compound, in translations from a foreign language. And he goes on to suggest a most important distinction, which would revolutionize and rationalize examinations, if it were universally accepted—a distinction between essentials and inessentials. The essentials tally approximately with that power of applying knowledge, which examinations can test; the inessentials with mere memory-work, the remembering of facts. In respect of the power of applying knowledge, the test of minimum capacity, the minimum pass standard ought to be eighty or ninety per cent., whereas in the case of inessentials from thirty to fifty per cent. may suffice. "To set papers in which essentials and inessentials figure on an equal footing, and to allow a candidate to pass who obtains thirty to fifty per cent. of the marks on the whole, is a procedure which has had serious effects on school education, and for which our examining bodies themselves in the end pay very dearly." Now this, it may be remarked in passing, is precisely the sort of paper, and the lower limit is the rate of pass marks, which we have at present in India.

Along with all this we may well take some wise words about examinations which occur in one of the letters of "*An Oxford Correspondence of 1903*," edited by W. Warde Fowler (Lincoln College, Oxford) and published last year "Examinations there must be of one kind or another; but the less we have of examinations, that do not positively help us in education, the better we shall be as a nation

I would lay it down as a first principle that all examinations should contribute to the education both of examiner and examinee, and that when they are obviously only used as a test, as in the competitive examinations of Government, they should (if no other way can be found of selecting the best men for the purpose you have in view) be constantly scrutinized by a committee of educators of the highest reputation, and reduced to a minimum in regard to subjects and duration. We in England have become so completely salted, soured, and pickled in these examinations, that we no longer use our natural intelligence in judging them."†

But we have to turn alike from pictures of happier educational climes, and the struggles of academic Titans taken in the toils of the existing system, and face the problem of examinations as they exist, and probably as they must long exist, for us in India. It is time, nevertheless, to recognize that there are parts of the western world where the examination dragon has been slain or bound, and that we must come to our own problems with fairly open minds, because there are more solutions than one, and our solution in India is not the only solution, or the best.

There can be little doubt that much of current criticism of examinations as a part of education is sound. Examinations from their very nature to some extent warp education: the preparation for an examination necessarily creates an interest which takes the place of pure study, which should be disinterested, concentrated on the subject of study and on that alone. Things should be learnt for their own sake; if languages, in order to acquire and use the language, to read its literature, write it, speak it, think in it: if a science, to acquire the faculty or power which the knowledge of it gives, whether it be mathematics, or physical science, or a branch of philosophy. And above and beyond the individual ends of the special studies are the grand ends of education as a whole, the cultivation of mind and character, the perfection of the powers of judgment, the preparation for life, the progress of the human race. The examination inevitably gives a wrong direction to the whole process; for the ends of knowledge it tends to substitute the passing of examinations, for the mastery of a language or a science as such—aptitude at recalling

† An Oxford Correspondence of 1903, pp. 37-38.

mere details, which may or may not be valuable in themselves. From the highest standpoint examinations are an evil. That we do not repudiate and abolish them in an access of righteous wrath is because we are not often in a position to adopt the highest standpoint. If all learners would learn for disinterested love of the things taught them, we should not need examinations; and there is much else that now forms part of educational machinery which we should not need. But unfortunately we know that few learners will learn for disinterested love of knowledge and of the mind, and therefore we are compelled in various ways to supply indirect and secondary motives. Examinations are such a secondary interest, and at present, in India and many other places, we cannot do without them. They have another great usefulness of course. They do sift those subjected to them and supply a test—a workable test, if not ideally the best—of relative fitness. In England and to some extent in India this social purpose of examination really takes precedence of the educational. Examinations form a convenient test for marking men's fitness for employment of many kinds. They take the place of a system of arbitrary selection which always tends to degenerate into patronage, or assignment of places by favour apart from merit, which has been found in experience, and will always be apt to become again, a worse abuse than examinations. Examinations for the present we must have, and for the purposes of this paper it is idle to discuss their total abolition. Yet confessedly examinations are not an unmixed good. They inevitably carry with them serious drawbacks. The aim must be to make the good the greatest possible and to reduce the inherent evils to a minimum, to find "how the commodities may be best avoided, and the commodities tainted." A clear recognition of what the inevitable drawbacks are is so far useful that it shows us what to guard against.

For the aim in view I shall venture to lay down
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should frame them so as to give the latter a series of opportunities of showing how far he possesses an intelligent and first-hand knowledge of the subject-matter. *We consider that easy questions are best suited for this purpose.* Such questions enable a really good scholar to distinguish himself, while the average student puts down what he knows without waste of time."

The special importance of the question of amount was pointed out in the second paper of this series. It arises from the peculiar and nowhere else paralleled difficulties which Indian students have to grapple with because the language in which they learn and are examined in is not their own language but a foreign tongue. Marked allowance ought to be made for this peculiar difficulty in all paper-setting as well as in the definition of courses of study. To write thoughtfully in any language must take appreciably longer for one to whom it is a foreign tongue, and we wish to encourage thoughtful writing: papers therefore for foreign students should be proportionately shorter, at least probably a fourth or a fifth shorter. This should be recognized all over India, and relatively short papers be adopted and approved.

A sixth principle needing to be consciously thought of, though difficult to bring into operation, is that the numerical valuation of examination "answers" is inherently fallacious. This quantitative expression of qualities cannot ever be done perfectly. The rough working methods we all adopt, in practice though they serve their purpose, are likely to produce wrong results, unless we temper the rigidity of marks by some broader estimate of quality. A trained examiner could often better apply a pure quality test both in Pass and Honour papers. A trained examiner will discern by rapid judgment, which partakes of the nature of intuition, whether the work before him is first-class, second-class or third-class; whether the writer is competent or incompetent. Therefore it is well to recognize that a system of marks should be elastic and admit of any required variation at the examiner's discretion. At all events it is highly inexpedient to emphasize the rigid nature of the marks system by such means as publicly announcing fixed pass percentages, or indicating in the margin of printed papers the exact number of marks at which the answer is to be valued. These forced pre-judgments of marks may lend a specious semblance of inflexible fairness to the system, but they hinder rather than help true fairness,

THE ORGANIZATION OF THE COLLEGE.

IDEAS about education in Indian colleges are in process of change about us, and we who are engaged upon collegiate education are suffering the manifold discomforts incident to a period of transition. There are some perhaps, who still think the old was better; it was certainly easier; but the time-spirit is just now driving us on and we have to adapt ourselves to the new conditions as best we may. There are those, I know, who have been found to affirm that relations between students and their teachers long ago, when colleges first came into being, were closer and more intimate. To some extent that may have been so, though I think the persons who so speak incline already to look back on this earlier age through a mist of romance. At least it may be supposed that when classes were smaller and examinations less harassing it was easier to know students individually and to show them more personal sympathy. But on the whole I find every reason to believe, and little or none to doubt, that conditions were generally less difficult and standards less exacting in former times than now. Teachers and taught sauntered through the fields of learning instead of driving and being driven. It is the Nemesis of system that has overtaken us. We have elaborated and complicated and regulated our examinations, till the whole system has become a wearisome bondage, and in elaborating the means we have lost sight of the end. Then in justifiable revolt against the straitness of the bonds that confine us we have drawn upon ourselves new responsibilities before we have shifted the old burdens.

For, if there is any one principle in which all who think on the subject are just now agreed, it is that examinations and lectures are not education. They may be part of the means of education, but they do not of themselves constitute education. It is common work, common aims, common recreations, common interests that make up the most valuable part of education. A conviction of this truth underlies a great deal that we have for a long time been trying to do before there was any conscious formulation of a change in the scope of educational aims. This is why a professor here and there would be found playing cricket or football with his students, or presiding at students' meetings; and why to

positive affection for the college he attended. In brief, he lived to make the time spent at the college as short as possible. He came just in time to deliver his first lecture; and he vanished as soon as the last was over. The attitude of students was closely similar and their practice corresponded. They listened to, and scribbled notes of, lectures for four or five hours at a stretch, and they went away. There might or might not be a meeting of a Debating Society after the last lecture, and there might or might not be cricket or football at a later hour of the evening, and a professor might also at his discretion interest himself in such things. But, broadly viewed, a professor's daily duties, as far as the college was concerned, were to deliver lectures, and a student's duties were to attend lectures.

We have not found this conception of duty satisfactory (nor the results all that could be desired); and we are trying to enlarge and deepen it. We are coming to think that a professor should not only deliver lectures, but also personally ascertain that his students are getting profit

from them. We are laying down as an axiom that a professor's duties do not end at the doors of the lecture-room (Lieutenant-Governors and other persons of authority have said as much), or even at the gates of the college, but that he should assume a large and somewhat indefinite responsibility for all his pupils' well-being, physical and moral as well as intellectual. Therefore it is that we inspect lodging and hire boarding-houses, elaborate systems of class exercises and examinations (especially on paper) and talk of the importance and usefulness of the tutorial function. All these things, and there are others as well, claim time and energy and very considerably increase the cares and labours of college professors and still more considerably of heads of colleges. It is very important to be right in the matter. Is the trend that things are taking a happy and hopeful one, or are we straining after a mistaken ideal?

There can be no doubt that the consummation to which all these signs point, to which these activities tend, is the residential college. But while there is very much to be said for the advantages of the residential college, the obstacles in the way are very great, and it is doubtful if the opinion of those most nearly concerned, that is the educated Indian public, really approves. In these papers the balance of judgment will follow the aim which was recognized in the beginning as the real end at which collegiate education in India must aim, strengthening of character and judgment. If the residential college is better calculated to promote that end, we shall here declare for it, notwithstanding present embarrassments or the obstacles and discouragements that lie in the way. The best means of testing this is I conceive to portray the image of the residential college (that is to be) in action, not necessarily as it exists anywhere, but as it might conceivably exist; the model college, not of actuality but of imagined possibility. If it is already realized anywhere as a whole or in part, so much the better.

The residential college is an independent commonwealth, which within the limits of the conditions of student-life offers all the elements of complete living. Its end is education for the ultimate purposes of life on a high plane; its means are the common-life in subordination to the interests of the community as a whole and in harmony with the interests of all its members.

On the one side it is an enlargement of family life, which for the educational purpose in view is too narrow, too concentrated, too closely allied to personal interest; on the other, it is an intensified and more easily comprehended form of the life of the state or commonwealth. The college should be a small commonwealth. It should be at the same time a large family. Its wider aims and interests enlarge and ennoble the narrow intensity of family life. The work and play in common are a mimic representation of the life of the state or nation, only in an intense and more concentrated form, comparable, we may fancy, to the life of the city state of classical or mediæval times. It is a working object lesson of the value of disinterestedness and public spirit. It should teach by example the uses of co-operation and the advantages of forming part of an integral whole.

Therefore it is the college itself which is the ruling conception, dominating the order and life of the institution. The college itself is the end of the life lived by its members; it is a social unity in which all the members share in common, whose welfare is a higher object than any success merely personal or even the collective interest of the actual members. For the college is more than a sum of individuals; it has a past and it has a future; a tradition handed down and to be handed on. It lives not in any single generation of students or teachers, but through a series of generations, taking something valuable from each and passing it on to those who come after. It is in helping to realize better this corporate or common life of the college, that the residential college has so immensely the advantage, because this conception itself as a working principle is the most valuable part of a liberal education, its perfect consummation and bloom.

But how is this conception, which is an abstract and spiritual (some probably will say a fantastic) thing, to be brought home to the minds and consciences of its members? It must be through the activities of the common life, and above all, through giving outward expression to the collective life of the college. It will not be enough then to put students in classes and deal with them as individuals or as groups; we must somehow accustom them to act all together and to fall into the way of recognizing themselves as a single community. Therefore more important than

class rooms or laboratories in the ground-plan of our college, will be the building of a hall which shall be the common meeting place, or ecclesia, of the college as a whole. And we must not only have our college hall, but we must use it; if necessary, we must invent means of using it. The college must sometimes meet as a whole. It can be done with a little contrivance.

Clubs need captains, presidents and secretaries. The college must assemble in the College Hall to elect them. There are subjects of general interest outside the routine of the class-room; we may with clear advantage scheme out series of lectures in such subjects and offer them to the whole college. It is not beyond human ingenuity to devise functions in which all the college may take part, and which in the course of years will gather to themselves significance and dignity. And these things we must set ourselves to contrive and do, if the view here taken of education is the right view. Further, the college is a moral institution, and there are definite moral relations between teachers and students. Is it extravagant to hold that it is one of the due functions of the head of a college to address the college from time to time on aspects of the common life and its obligations? May not this same function be usefully delegated from time to time to other fit persons on the staff? This is not the specific religious teaching which some desire, neither is it the exposition of the moral text-book which others hanker after, nor even the formal lectures on morals for which Government has recently been petitioned; but it may be a part of the practical training which is needed. Chester Marnaghten has shown how addresses (lay sermons) to students may be plainly to the purpose, and neither indiscreetly propagandist nor a tissue of insipid platitudes. A principal who gives much thought to the interests of his college and students will always have something to say to them.

Athletics form another field inviting joint action; not all students will play games, but as many as possible should be encouraged to do so; and in the efficient organization of games there are especially favourable opportunities for giving reality to the common life. In games the oneness of the institution is, or should be, a prominent consideration. The "team" is representative of the college more specifically than the candidate or any batch of candidates for an examination. The team is

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management it is expedient that a principal should have full control, that he should be the executive chief with undivided responsibility, that he should even be something of an autocrat. But it is eminently desirable at the same time that the whole staff should take an active part in the general college life, and that can hardly be unless they also share effectively in the administration. Hence the efficacy of the College Council, which has been everywhere talked of since the report of the Universities Commission and in some places is quite an ancient institution. The problem seems to be to contrive that the Council shall strengthen the executive agency without impairing the singleness of ultimate control. This seems to be best secured if the Council have complete freedom of suggestion and criticism, without infringing on the full ultimate responsibilities of the head of the college. This rules out the type of Council which governs as an oligarchy, while the nominal head of the college is only the executive officer giving effect to its decisions. It is better to have one fully responsible head. But it is at the same time an object to get the maximum of co-operation and of interest from the staff. The maximum of interest is only attainable if every member of the staff has some 'say' in the management of the college. The maximum of co-operation is only attainable through free delegation of function. The Council as a consultative body through Professors' meetings gives free opportunities to every member of the staff to make suggestions, to offer criticisms, to contribute whatever he has to the common fund. But the co-operation must not be confined to talking and suggesting. The principle of division of labour needs also to be fully employed. The natural tendency of a departmental system is towards the concentration of all authority outside the class room in the Principal alone. In the college of which I am writing there is much delegation of functions to individual members of the staff: to one the supervision of the library, to another the presidency of athletics, to another the charge of the Common Room, or of associations grouped under it. And such delegation, to be efficacious, must carry with it real authority and responsibility. Committees also have a certain social value; but meetings of committees are apt to consume an amount of time disproportionate to the work done.

Another particular of the first importance in which the need and usefulness of close co-operation is manifested is the regulation of study. It is not to be supposed that because of the stress laid on the social side of the life of the college here outlined that the ordinary studies are neglected. On the contrary, a combined effort is made by the whole staff to make the method of study systematic and thorough. The object is that all should feel themselves to be working on a common plan. Particular care is taken that something is really done from day to day, that lectures work in with the students' own efforts, and that the whole course of study is directed to a real grip of the thing studied. This is the reason for a comprehensive system of class exercises which keeps the work together and sifts the serious student from the slack. The details of such a system may well vary, something depending on circumstances, something on accident or choice. Much obviously depends on the size of classes in determining the kind and amount of assistance possible. The essential principle is that the work should be tested with sufficient frequency to give a stiffening to the process of acquisition. One paper of not less than an hour's duration once a month in every subject is a fairly workable standard. It is absolutely essential, however, that the papers should be corrected, marked and returned. If the papers are not corrected, or even if they are not returned within a narrow limit of time, interest is lost, and the efficacy of the system is sapped. The marks also must be systematically recorded, and on this record must depend the promotion of students from class to class and permission to appear at university examinations.

The labour which the maintenance of this system imposes on the staff is very great: it is, perhaps, not strictly the sort of work a 'professor' expects to be called upon to do. While the strain of it continues, it leaves him little leisure for more congenial work. He cheerfully submits to the sacrifice, because he clearly perceives that help of this sort is specially needed, because of the habit that has grown up among Indian students under their lecture system of amassing notes at one time and preparing for examination at another. The system therefore brings into play that sense of corporate unity and of common interests, on which, as we said at the beginning, the value of the college as an institution chiefly depends.

As complementary to all this the number of lectures for students and for lecturer is far fewer than under the old system,—if only because it is discerned that formal lectures are of less importance than stimulus and the work the student does for himself. At the college described a professor rarely gives more than two lectures in any one day, while three lectures a day is regarded as the utmost number which a student can profitably listen to. On this system the student has time to prepare himself for lectures and works by himself under the guidance they give, the professor gives more thought to his lecture course and has time to give to supervising the work of his classes in these other ways. The general result is that more meaning is put into the work. Lecturers and students know themselves to be working together for an end, and where the right spirit is awake, the end will be felt to be, not merely preparation for the examination (though this will not be disregarded), but some further end of permanent value. The classes, moreover, are kept working together in this way to within a few days of the examination, because this is recognized as the right way. They do not break up weeks or months earlier; and when the examination comes, all need, and have earned, a long vacation.

Another device tending to draw the college together, and especially to render closer the relations between students and professors, is the assignment of every student in the college to some particular member of the staff in a special relation of tutelage. This is a 'tutorial system. When numbers are great, the relation cannot, perhaps, be very close: up to an average of twenty, students to each tutor it is at least in some sort workable. The responsibilities of the tutor do not admit of exact definition; but the effect designed is that every student belonging to the college should feel that there is at least one among his teachers to whom he may go for advice in any difficulty with a certainty of having his claim to such help admitted.

It is, perhaps, hardly necessary to recall that the members of this college, staff and students alike, are mainly resident. It is only because students and teachers live at the college, and meet each other readily as the circumstances of the common life make occasions, that collegiate life attains its completeness. Without this living together

collegiate life is hardly possible at all. It is obvious that each one of the elements of the common life, each form of association outside lectures—whether literary, athletic, recreative or purely social—is realized with difficulty, if those who are to take part in these associations live at a distance from the college and from each other. Even for the purposes of study the free resort to libraries and laboratories is denied to those who live at a distance. If students and staff are resident, they can meet whenever the need arises, without difficulty. If either, or both, live at a distance every meeting has to be separately contrived, and the common collegiate life is at best very narrowly restricted. Therefore the college, at which the usages here described are practised, is necessarily resident, residence bringing with it the need of supervision and fresh social relations. Further, the college meets and separates on a fixed day which is the same for all. Between the first day of the term and the last the college remains together in one place, co-operating in work and play and living in all ways possible a common life. The result is seen in the strong corporate spirit which marks its members; in the full, strenuous, ordered life of the whole.

This (very imperfectly described) is the type of college to which present tendencies are certainly leading and which is being already realized everywhere in part, in some places with considerable completeness. That it is on the whole better and of higher educational value than that which it is superseding is tacitly admitted. But we need to be more sure of whither it is leading, of what we are doing and why we are doing it. It is even expedient to recognise what we are giving up; for the old system had its reasons and its defence, which are in part valid still. Yet there can be little doubt on the whole that the change is for the better, and that it is called for by all the circumstances, especially by that consideration of ends with which these papers started.

There is one other modifying circumstance which should not be left out of account. The institution described is a college, where the students are young men of responsible age. Some of the elements we are introducing are borrowed (plainly enough) from the English idea of the public school. So far as they fit our purposes, that origin is not in itself an objection; but in the interest of these purposes we must beware of going too far in the direction

of the school. We must be careful to leave to students enough freedom and initiative to accord with the end we have set up. Therefore while in our zeal to promote the common life of the college and express in action the singleness of the institution we shall not hesitate to introduce a large amount of regulation and control, there will be a limit to this regulation and personal control in the case of the college. We shall be careful to maintain the college as an institution in organization and discipline distinct from the school. When, however, we come to deal with the school this restriction may be taken back. And all that has been said of the importance of the common life for the college may be said with double force of the school.

